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TELECOMMUNICATIONS TRADE

HEARING

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL TRADE

OF THE

COMMITTEE ON FINANCE

UNITED STATES SENATE

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CONTENTS

ADMINISTRATION WITNESSES

Page
Hon. Paula Stern, Chairwoman, International Trade Commission 6
Hon. Lionel Olmer, Under Secretary of International Trade, Department of Commerce 25

PUBLIC WITNESSES

AT&T Technologies' Network Systems Group, E. Wayne Weeks, president 35
Electronic Industries Association, John J. McDonnell 37
International Brotherhood of Electrical Workers, Robert B. Wood 105
Keefe, Robert J., chairman of the board, the Keefe Co 90
Lautenberg, Hon. Frank R., U.S. Senator, New Jersey 4
Malmgren, Dr. Harald, Malmgren, Inc 12
McDonnell, John J., Jr., group vice president, Telecommunications Group, Electronic Industries Association 37
Weeks, E. Wayne, president, AT&T Technologies' Network Systems Group 35
Wood, Robert B., director of research, International Brotherhood of Electrical Workers 105

ADDITIONAL INFORMATION

Press release announcing hearing 1
Prepared statement of:
  Senator Danforth 1
  Senator Bradley 2
  Hon. Paula Stern, Chairwoman, International Trade Commission 8
  Dr. Harald B. Malmgren 16
  Hon. Lionel Olmer, Under Secretary of International Trade, Department of Commerce 28
  E. Wayne Weeks, Jr., for AT&T Technologies 36
  John J. McDonnell, group vice president, Telecommunications Group 40
  Robert J. Keefe, on behalf of Nippon Telegraph & Telephone Public Corp. 92
  Robert B. Wood, International Brotherhood of Electrical Workers 108

COMMUNICATIONS

Statement of Ambassador Robert E. Lighthizer 119
AT&T supplementary testimony 138

TELECOMMUNICATIONS TRADE

TUESDAY, JUNE 26, 1984

U.S. SENATE,
SUBCOMMITTEE ON INTERNATIONAL TRADE,
COMMITTEE ON FINANCE,
Washington, DC.

The committee met, pursuant to notice, at 10 a.m., in room SD-215, Dirksen Senate Office Building, Hon. John Danforth (chairman) presiding.

Present: Senators Danforth, Bradley, and Grassley.

[The press release announcing the hearing and the prepared statements of Senators Danforth and Bradley follow:]

[Press Release No. 84-152]

SUBCOMMITTEE ON INTERNATIONAL TRADE SETS HEARING ON TELECOMMUNICATIONS TRADE

Senator John C. Danforth, Chairman of the Subcommittee on International Trade, announced today that the Subcommittee would hold a hearing on the international trade consequences of the AT&T divestiture and the future of international trade in telecommunications.

The hearing will be held on Tuesday, June 26, 1984, at 10 a.m. in room SD-215 of the Dirksen Senate Office Building.

In announcing the hearing, Senator Danforth noted that the report of the International Trade Commission on the trade impact of divestiture is expected June 18. Accordingly, the hearing will provide the first public opportunity to review the conclusions of the ITC's report. Senator Danforth, who introduced S. 2618, the Telecommunications Trade Act of 1984, stated that a hearing on that bill will be scheduled at a later date.

STATEMENT OF SENATOR JOHN C. DANFORTH

AT&T divestiture of its local operating companies is likely to have the greatest impact on U.S. trade of any so-called "domestic" decision in recent decades. Unfortunately, its impact on American trade was hardly considered by those involved in this and other court and regulatory changes in telecommunications that preceded it.

For this reason, I have introduced legislation to address the trade impact of that decision and to open major foreign markets to U.S. exports. This legislation, the Telecommunications Trade Act (S. 2618), will be considered by the committee at a later date.

The breakup of the Bell System came about after years of thought, litigation and legislation focused on domestic considerations of competition and deregulation. Yet, this domestic policy decision will have an enormous impact on the U.S. position in world markets.

The purpose of today's hearing is to explore the trade implications of AT&T divestiture and the court and regulatory decisions that came before it.

It seems to me that the restructuring of the U.S. telecommunications market is a trade disaster in the making. In trade terms, divestiture represents the unilateral dismantling of a major non-tariff barrier to imports through elimination of AT&T's vertical integration relationship between the manufacturer of equipment and the provision of service. That a number of American equipment manufacturers will be able to take advantage of the ending of this "captive" supplier relationship is a healthy event. That this will also lay bare the U.S. market to many billions of dollars in new sales by foreign manufacturers—without any corresponding improvement in market access for U.S. exports—is unbelievably shortsighted.

The international situation with respect to telecommunications trade is unique and makes the trade implications of divestiture that much more ominous: The United States is virtually the only country in the world with a private telecommunications system. Practically all other industrialized countries have telecommunications entities that are controlled by--if not owned and operated by—their government.

The world over, PTTs are protected, nurtured and supported by their governments. Equipment procurement is confined to the extent possible to domestic manufacturers, who in turn use government financial support to develop new equipment and to promote their export drives. And what better target than the largest market for telecommunications in the world!

Recent trends in telecommunications trade only begin to tell the story: As a result of court and regulatory changes such as the Carterfone decision in 1968 and other recent FCC actions to further open the customer premises equipment market, we have begun to see major shifts in telecommunications trade patterns. These decisions have already contributed to America's first negative balance of trade in telecommunications. The 1983 deficit is expected to almost double in 1984—attributable once again to flat exports and an increase in imports by over one-third.

One need look no further than the cumulative effect of these decisions to see the dramatic impact a domestic decision can have on production and imports of telecommunications equipment: In the study just concluded by the ITC, import penetration of the U.S. market in telecommunications increased from 3 percent to 11 percent. In products such as telephone sets, PBXs and display terminals, import penetration moved from 5 percent to almost 19 percent.

AT&T divestiture creates a major new market for imports of telecommunications equipment—not only for customer premises equipment, but for network equipment as well. While the ITC study may understate the magnitude of the cumulative effect of these changes, the trends are nonetheless evident:

The value of telecommunications imports is expected to almost triple to over $5 billion in the coming decade.

The rate of growth of imports will be almost double that in the absence of divestiture (6.3 percent vs. 11 percent); and

Imports of telecommunications equipment will be more than 25 percent higher by 1993 than they would have been in the absence of divestiture.

Today I would hope that we can further assess the trade implications of AT&T divestiture and begin to consider alternatives for prompt action to deal with them.

STATEMENT OF SENATOR BILL BRADLEY ON THE TELECOMMUNICATIONS TRADE ACT

Mr. Chairman: I am pleased that the Subcommittee is holding this hearing on the effect of the AT&T divestiture on international trade. The telecommunications industry is among the world's fastest growing industries. It has been estimated that the worldwide telecommunications market will expand from $59 billion in 1983 to $88 billion in 1988.

According to the ITC the U.S. market for telecommunications equipment was $18.5 billion in 1983 and is expected to rise to over $41 billion in 1993. However, access to much of this market has been opened up as a result of the AT&T divestiture. In effect, we are unilaterally giving foreign companies new U.S. market opportunities and we are getting nothing for it. We can no longer afford to give something away for nothing. If the U.S. market is open and foreign markets remain closed, foreign producers will have no incentive to pressure their governments to give U.S. companies a chance to sell our telecommunications products in their markets.

I became an original cosponsor of the Telecommunications Trade Act because this country needs to be more vigilant in opening up foreign markets for U.S. products. The telecommunications industry is one of other countries' most protected industries. According to the Department of Commerce, "other major markets (outside of the United States) remain essentially closed, operating according to the established system of government held PTT's (postal-telephone and telegraph) and preferential procurement procedures". We must do more to open those markets for U.S. products.

In the words of the Commerce Department "As long as this type of asymmetry persists, firms based in open-market countries (and therefore without the luxury of insulated domestic demand) could find themselves at a temporary competitive disadvantage before their protected counterparts. And since the United States has led the way in terms of liberalization, American telecommunications equipment manufacturers, in particular, may face unreciprocated foreign competition."

What the Act does is to grant to the President the authority for three years to enter into trade agreements providing for more open trade in telecommunications equipment. As leverage, the Act stipulates that U.S. tariffs on telecommunications equipment will rise after the three years to the level that would have been in effect without the commitments made during multilateral negotiations, unless the President successfully negotiates a trade agreement opening up foreign markets for U.S. products. In effect, the Act gives our trade negotiators some leverage when they sit down with their counterparts from other countries.

While I am generally reluctant to increase trade restrictions, this country needs to use whatever means available to force other countries back to the bargaining table to liberalize trade. Let me emphasize, however, that the Act is consistent with our international trade obligations under GATT. I hope that this legislation will be the impetus for other countries to provide swift action to open more markets, not less.

Indeed, the objective of this legislation is to further liberalize trade. Liberalized trade, developed under a set of rules which provide a discipline in the international market place, has served the world well since World War II. But those rules are not providing an effective international discipline today. Five years ago this Congress passed the Trade Agreements Act of 1979 and we had high hopes for the new codes, including the one on government procurement. Yet five years later we find that precious little has been gained. Our agreement with Nippon Telephone and Telegraph [NTT] has resulted in less than $200 million in sales.

The policy issue today is not a question of free trade *vs* protectionism. It is a question of discipline and rules, who obeys and who does not, what is fair and what is not. Is it fair that foreign producers of telecommunications equipment continue to receive protection and support from their governments, while we open up our market to competition from these firms and their governments?

This country must stop treating trade policy as a stepchild of foreign policy and domestic economic policy. Put bluntly, we do not have a trade policy. In this interdependent world, all of our "domestic" policies have an effect on industry's ability to compete internationally. We have no idea what our myriad of policies for defense procurement, small businesses, subsidies, tax breaks, and all of our trade restrictions have on the structure of U.S. industry or its ability to compete internationally. The divestiture of AT&T is another in a long list of policy changes which are taken without considering the implications for trade. Until this country adopts a more coherent trade strategy, we will be forced to use whatever leverage the Congress can muster, on a piecemeal basis, to open up foreign markets.

In sum, the world market for telecommunications will be the source of rapid growth in the coming decades. However, foreign telecommunications markets are characterized by extensive government intervention, including restrictive import practices and discriminatory government procurement. Only by using access to the U.S. market as leverage, can the United States achieve an open world market for trade in telecommunications—thereby gaining access for U.S. exports and increasing export-related employment. The time has come for the United States to use that leverage, otherwise our firms will continue to operate at a competitive disadvantage to the detriment of our economic base.

Senator **Danforth**. I have a statement which I am going to place in the record. The subject of this hearing is the present state and the future of telecommunications trade, especially after the divestiture of AT&T. Prior to 1968, the telephone operating companies in the United States were really a captive market for Western Electric. Beginning with the *Carterfone* decision, gradually certain elements of the U.S. market have been opened up to increased competition culminating most recently with the AT&T divestiture. We are moving into a situation where U.S. telephone operating companies are going to be able to buy all sorts of equipment from all sorts of suppliers.

The effect of this is that foreign sources of telephone equipment will be able to avail themselves of the U.S. market. And this result was something which, to my knowledge, was not considered at the time of the order of divestiture for AT&T.

The result is going to be that the market in the United States will be open to competition, whereas markets in other countries will almost all be closed to competition. Most telephone systems abroad are government owned and government operated, and most suppliers of telephone equipment are heavily influenced, subsidized, or operated by the governments.

Therefore, the concern that Senator Lautenberg and I have had is that the trend in the future will be that the U.S. market will be open, other markets will be closed, and AT&T divestiture has amounted to an uncompensated for concession—amounting to the unilateral removal of a nontariff barrier to trade without any compensation whatever from other countries.

So we have introduced a telecommunications bill with the aim of trying to redress that situation and to provide greater leverage for the United States for our producers to compete in foreign markets to the extent that other countries will be able to compete in our market.

I'm happy that Senator Lautenberg is here this morning. Senator, we have been seeing a lot of each other lately. It's good to have you in the Finance Committee. Would you like to testify?

Senator LAUTENBERG. Yes, please, sir.

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. I'm pleased to join you at this subcommittee this morning. At the outset, I want to commend you for your leadership in addressing the issue of trade in telecommunications equipment. You are one of the first Members of the Senate to recognize the profound trade implications of the divestiture of AT&T. And I'm pleased to join you in sponsoring S. 2618, which is intended to deal with these implications and will be addressed in depth at a later hearing.

I note that the State of Missouri, known for many things, is not particularly prominent in the production of telecommunications equipment. The industry is not a major one in your State, but you recognize that this is a matter of great national importance and that at stake is the future of our domestic telecommunications equipment industry.

We have embarked on a great experiment in telecommunications policy, a policy marked by the breakup of AT&T. We have proceeded farther than any other nation in testing the view that competition is the path to innovation, efficiency, and increased consumer welfare. Judging by the most recent experience, it's not going to be a smooth or easy road to travel. We are all coping with problems of adjustment. But for better or for worse, there's no turning back.

The task before us in the Congress and at the FCC is to ensure that this experiment succeed for the benefit of our industry, consumers, and the economy at large. In the information era, the fate of the telecommunications industry is a critical concern. And the task before us is to recognize problems as they arise and to address them.

The problem we approach today arises from a simple fact: The U.S. telecommunications policy does not exist in a vacuum. The United States provides the world's largest market for telecommunications equipment. Each step that this country has taken in promoting competition has also opened up our market to foreign entry. The *Hushafone* and *Carterfone* decisions you referred to earlier led to the opening of customer premises equipment. But no step has been as significant as the divestiture of AT&T. The $13 billion market of local Bell operating companies, once captive of AT&T, was opened to competition by all comers. Moreover, the marketing of customer premises equipment—and Andy Griffith is just one indication—has become more intense than ever before as an indirect result of divestiture.

These steps have created new markets for foreign manufacturers, and they are seizing the opportunity. Imports of telecommunications—and here I cite the figures of the ITC—will rise from roughly $2 billion in 1983 to more than $5.4 billion in 1993. As an executive of Nippon Electric was quoted in BusinessWeek not long ago, "All at once, the United States has become an open market. If you have a good product, you can ride the wave."

Mr. Chairman, the problem is not that we have opened our markets. The problem is that at the same time foreign markets remain closed. Assuming open market policies, the ITC predicts that exports will rise from roughly $1.3 billion in 1983 to close to $2½ billion in 1993. In other words, our trade deficit will widen from $648 million to about $3 billion in a decade, an increase of almost fourfold.

Just 2 years ago in this area we had a trade surplus. While we have encouraged competition, most foreign nations maintain government-owned monopolies to operate their networks. These authorities generally favor domestic manufacturing. They often set standards that impede imports. So, it came as no surprise to me that firms cite two major factors determining a sale abroad.

First, quality; second, domestic content.

American firms will compete one way or the other. They will export from the United States, contributing new employment here. Or they will build plants abroad with fewer direct benefits at home. The problem is that such decisions will not be made on the basis of economics alone. They are made on the basis of politics and trade barriers.

For my State, the problem is one of great importance. New Jersey ranks fourth in the Nation in shipments of telephone and telegraph equipment. Some 40,000 men and women are employed in the manufacturing of telecommunications equipment. They work not just for AT&T, but for a variety of firms, small and large. For the Nation as well, the problem is one that must not be ignored. Telecommunications will be the infrastructure of an information age economy. And the growth that will come in telecommunications is something America should enjoy.

I applaud the committee's initiative in seeking the study by the ITC. It's an important contribution to the information base, but by no means is it the final word. This hearing will also provide the Congress with additional insights into the problem.

Then, Mr. Chairman, we must act. Not to protect a sick industry, but to ensure the continued vitality of a healthy one; an industry that has led the world in technological achievements.

Thank you for this opportunity.

Senator **Danforth**. Thank you, Senator.

I think particularly your last sentence was very meaningful. This is not a sick industry. This is an area where we are very competitive, where we do lead the world. The question is whether we are going to have equal opportunity to compete abroad. My hope is that free trade does not mean that the U.S. market is open to other countries, if their markets are closed to the United States.

You don't have any doubt, do you, that the United States can maintain its leadership role in telecommunications if we have equal opportunity?

Senator **Lautenberg**. If we have equal terms. I was in Japan two weeks ago for an entire weekend, for an appearance before a world computing services congress. I delivered a speech there. I come out of the computer industry. And I had an opportunity to meet Mr. Shinto, who is the head of Nippon Telephone and Telegraph. And in the few minutes that we had to chat, I reminded him about how anxious we were to do business and to have the opportunity to do business. And he responded by saying, "Ah, but we now have a bilateral agreement." Well, we have had that for some time, but we haven't had any business to speak of. He said, "But, yes, we have our agreement."

And I think that reflects something of the insensitivity that we face. We must insist, with your leadership, Mr. Chairman, that we in America, our companies, have an equal opportunity to do business with the firms abroad, just as they would like here. And if we insist on that and we stick to our guns, I think we can give the emphasis required to share the growth of this industry in the future.

Senator **Danforth**. Senator, thank you very much.

Senator **Lautenberg**. Thank you, sir.

Senator **Danforth**. Our next witness is Chairman Paula Stern of the International Trade Commission. Madam Chairman, it is great to see you here in your new and exalted role at the ITC.

Chairwoman **Stern**. Thank you very much. It feels very good being here.

STATEMENT OF HON. PAULA STERN, CHAIRWOMAN, INTERNATIONAL TRADE COMMISSION

Chairwoman **Stern**. Mr. Chairman, it is an honor to appear here today to present the Commission's studies and changes in the U.S. telecommunications industry and the impact on U.S. telecommunications trade. As you know, the Commission undertook this study at your request on November 15, 1983, and our full report was provided to you June 15, 1984.

In the interest of brevity, I have provided a statement for the record, and I will keep my remarks to a minimum.

Our study tried to gauge the trade impact on telecommunications equipment resulting from the recent regulatory changes and the divestiture of the American Telephone and Telegraph Company. The Commission found that the U.S. based telecommunications equipment industry remains the largest in the world, accounting for approximately 32 percent of worldwide telecommunications industry shipments. U.S. producer shipments of all telecommunications equipment increased by 39.5 percent during 1979 through 1983, from a figure of $12.8 billion to $17.8 billion.

Transmission equipment has been the fastest growing sector. Domestic producer shipments increased by 120 percent during the 1979 to 1983 period.

Meanwhile, U.S. owned companies—primarily Western Electric, ITT and GTE—accounted for approximately 40 percent of worldwide sales. The Commission also found that U.S. imports are likely to continue growing at a more rapid pace than U.S. exports. The United States experienced trade deficits in telecommunications equipment of over $600 million in 1983. And the deficit in 1983 dollars, is expected to enlarge to just over $2 billion in 1993.

For the most part, deregulation has been the driving force behind the rapid increase in U.S. imports which began back in 1977. However, divestiture, which was decided in August 1982, and which took effect on January 1, 1984, is also expected to offer new opportunities for imports now that the Bell operating companies are no longer a captive market.

Customer premise equipment, such as telephone sets, key systems and subassemblies of private branch exchanges, is expected to continue to dominate the import list. The value of U.S. imports of customer premises equipment increased from $214 million in 1978 to $1.6 billion in 1983, when they accounted for almost one-fifth of apparent U.S. consumption.

The Commission projects U.S. imports of customer premises equipment to account for slightly over one-fifth of apparent U.S. consumption in 1993. The Bell operating companies are expected to purchase for resale significant amounts of customer premises equipment. These articles are particularly price sensitive and imported products appear to have a price advantage.

There will also be some imports of transmission and light guide equipment by the Bell operating companies for their own use. Most capital equipment requiring customizing, service and maintenance will likely remain the province of U.S. firms.

However, foreign owned U.S. producers are expected to increase imports of subassemblies from their parent companies. These subassemblies will then be further processed in the United States and customized and serviced by the U.S. facility.

Mr. Chairman, that completes my brief statement. And I have in the room members of the team at the United States International Trade Commission who did pull together the telecommunications reports. We would be happy to answer any questions you may have.

Senator **Danforth**. Thank you very much.

[The prepared statement of Chairwoman Stern follows:]

CHANGES IN THE U.S. TELECOMMUNICATIONS INDUSTRY AND THE IMPACT ON U.S. TELECOMMUNICATIONS TRADE, REPORT BY PAULA STERN, CHAIRWOMAN, INTERNATIONAL TRADE COMMISSION, TO THE COMMITTEE ON FINANCE, U.S. SENATE, ON INVESTIGATION NO. 332-172, UNDER SECTION 332 OF THE TARIFF ACT OF 1930

Good morning, Mr. Chairman and members of the committee. It is a pleasure and an honor to testify before this hearing on the U.S. telecommunications equipment industry.

We all know that the telecommunications industry touches the life of every American citizen, indeed most of the world's population. From telephone sets to communications satellites, telecommunications is an ever present, essential element in the growing togetherness of the world community. Most people think of telecommunications from the standpoint of the services—from the simple call to a friend all the way to international data networks for settling banking transaction accounts. But our telecommunications service depends on the equipment which is designed, produced, and installed by highly skilled people.

The United States recently took steps in reorganizing its telecommunications services by deregulating the sector to permit competition with the established networks, such as the FCC actions in the important Carterfone decision, the specialized common carrier decision, and the computer II inquiry. In a separate action brought by the Justice Department, Judge Harold Green of the District Court for the District of Columbia, directed that the major provider of telecommunications services, AT&T, be divested of its 22 local operating companies. Articles in newspapers, magazines, and journals each day cover some new facet of the impact of deregulation and the divestiture. These activities have opened up the U.S. market of telecommunication equipment. Imports of telecommunications equipment have increased, and foreign-owned manufacturers are commencing production in the United States.

In this environment, the U.S. International Trade Commission in November 1983 was requested by this Committee to study, under section 332 of the Tariff Act of 1930, deregulation and divestiture and assess their impact. We were asked to study the possible implications of regulatory changes and the divestiture on trade in telecommunications equipment. More specifically, the Commission was asked to prepare a profile of the U.S. telecommunications industry both present and future, to analyze key economic factors affecting the industry, to provide useful nomenclature for monitoring U.S. imports and U.S. exports of telecommunications equipment, and to predict the impact of the divestiture on U.S. trade in the short- and long-run.

The Commission has responded in its report, entitled, "Changes in the U.S. Telecommunications Industry and the Impact on U.S. Telecommunications Trade," Investigation No. 332-172. During the course of our investigation, the Commission encountered anxiety on the part of U.S. manufacturers, importers, purchasers, and prospective purchasers of telecommunications equipment. Many of the firms reported they do not know what they will be doing in the area of telecommunications production and purchasing in the next year, let alone the next 5 to 10 years. The Commission collected data from the U.S. industry for 1981-83 which preceded divestiture and collected projected data for the periods 1984-88 and 1989-93. In order to evaluate the future prospects of trade, the Commission developed three scenarios depicting the short-term, defined as 5 years, and long-term, defined as ten years, in the United States. The first scenario is a projection using the historical trends of data for 1967-83, the second uses estimates by respondents to the Commission's questionnaires to forecast the future, and the third represents the Commission's estimate of future trends based on trade articles and information obtained from discussions with industry officials and financial analysts.

For the purpose of this study, the term "telecommunications equipment" covered voice, data, and record point-to-point communications equipment, but excluded entertainment broadcast equipment, installation and repair, and engineering services. Here, in capsule, is what we have reported.

The U.S. telecommunications equipment market is the largest in the world, with 1983 consumption totaling $18.5 billion, and accounts for approximately one-third of the world's consumption. As a result of deregulation and technological advances, the structure of the equipment market has broadened to include an increasing number of common carriers and private networks. This expansion, together with the demand for more advanced, more flexible, and more inexpensive services has increased the demand for telecommunications equipment. During the period 1973-77, when the effects of deregulation were minimal and technological change was slow, the demand in real terms for telecommunications equipment remained flat. In the following 5 years, when deregulation and technological innovation were exerting more influence on the market, demand grew at an average annual rate of 5 percent in real terms—or 13 percent unadjusted for inflation.

To meet this demand, U.S. producers' shipments grew, in constant dollars, from $14.9 billion in 1978 to $17.8 billion in 1983, or at nearly the same rate as consumption. New markets and new opportunities were opened to telecommunications equipment producers as a result of deregulation and technological advances. Consequently, the number of firms in the industry rose from about 380 in 1978 to approximately 550 in 1983. Many of the new entrants are small consumer product or high technology firms that have targeted a particular niche in the market. However, there are also a significant number of manufacturers of radio and computer equipment that have entered the telecommunications equipment industry by adapting their products and technologies to telecommunications applications. During this period, competition, which had been almost non-existent in this industry, began to increase, especially in the customer premises equipment sector.

This increasing competition and the resulting imports led in 1983 to the first negative trade balance in telecommunications equipment. Chiefly as a result of deregulation which began to impact the industry significantly in 1978, imports grew rapidly from 1978 to 1983, increasing nearly 400 percent, in real terms. Over these 5 years, imports increased from $426 million to $2.0 billion, and their share of the U.S. market grew from 3 percent to almost 11 percent.

However, all telecommunications equipment sectors were not affected equally. The largest influx of foreign-made equipment was at the low end of the customer premises equipment market—telephone instruments and key systems—and in transmission equipment for private networks. These areas were the most vulnerable to imports because the purchasers were mostly end users whose primary consideration was price. The growth of imports includes not only goods manufactured in foreign countries by foreign firms, but also goods manufactured offshore by U.S. companies for sale in the United States. Offshore production by U.S. firms increased as these firms, facing stiff price competition from imports of foreign manufacturers, sought ways to cut costs and become more competitive.

During the same period, 1978–83, exports grew more slowly than imports, increasing 35 percent, in real terms, over 5 years from $1.0 billion to $1.34 billion. Foreign demand, measured in constant dollars, showed no growth during this period. Those countries that did experience growth in their telecommunications equipment markets were also telecommunications equipment producers. These countries have government-owned and operated telephone companies, and industry analysts allege that these markets are very difficult to penetrate. Due to the limited response from U.S. industry our investigation could not provide conclusory evidence on this issue. However, it is clearly a candidate for future study and evaluation.

The Commission's projection of the most likely future of the U.S. telecommunications equipment industry is scenario 3 in the study. It depicts a growth of consumption in excess of 8 percent annually, measured in constant dollars, over the next 10 years, compared to only 2.5 percent annually over the last decade. Domestic consumption is expected to grow from $18.5 billion in 1983 to $41.3 billion in 1993.

One of the fundamental changes in the market that should drive demand is the quickening rate of technological change, particularly from the new venture capital firms. Products are now obsolete almost as soon as they are installed. Customer demands for expanded services provided by the latest technology are expected to force more rapid replacement schedules for both public and private networks. Technologically, the United States should remain a leader through the next decade but foreign producers are expected to narrow the gap in the long run. Through 1993, U.S. exports are expected to consist mainly of high technology products such as digital switches and transmitters, and imports should be greatest at the low technology end of the spectrum—telephone sets, key systems, and subassemblies of private branch exchanges.

Advancing technology has also opened up new applications for telecommunications equipment that present substantial growth opportunities, such as cellular car telephones and the fully automated office. The business community's belief that enhanced telecommunications capabilities result in more successful operations should raise the demand for telecommunications equipment. Telephone and telegraph companies are expected to increase their consumption of telecommunications equipment in order to meet the demands of business customers. Further, companies choosing to bypass the common carriers should also cause consumption by end users to increase.

The trade balance is expected to remain negative and the gap between imports and exports is expected to grow from $650 million in 1983 to $3.0 billion in 1993. Low-cost foreign manufacturers, primarily in the Far East—such as Japan and Taiwan, are expected to continue to gain market share in the United States because

U.S. firms are high-cost producers and cannot compete on the basis of price. Again, we see the pattern where the greatest loss of market share is expected in those relatively low technology products which are price sensitive. Little gain is expected to be made by imports in the sophisticated, high technology sectors, such as digital central office switching equipment. Price is not the most important factor in this sector because of the size of the purchaser's investment and the large amount of peripheral equipment with which it must be compatible. In this instance, domestic producers are expected to lose very little market share because of both their technological superiority and their ability to service the equipment promptly.

Thus, the growth in imports, which the Commission estimates will be from $2.0 billion in 1983 to $5.4 billion in 1993, in constant dollars, should be much slower than that during 1978–83. This is due to the increased competitiveness of U.S. firms and the growing number of foreign producers that choose to manufacture all or part of their products in the United States. U.S. firms will tend to move labor intensive component production and low-end customer premises equipment to off-shore production. On the other hand, foreign producers will tend to move high-end customer premises equipment and other capital equipment production to the United States in order to be competitive in maintenance and service.

The Commission estimates that exports will grow, in constant dollars, from $1.3 billion to $2.5 billion from 1983 to 1993. Industry experts allege that the slow growth in exports is due to both foreign barriers to trade and the inexperience of U.S. telecommunications equipment firms in foreign markets. Industry representatives agree that even if foreign markets were deregulated—legally open to all manufacturers—the tendency for government-owned and operated telephone companies to maintain historical supplier relationships will remain a barrier. Local content requirements and import restrictions must also be faced. Of course to the extent these barriers are diminished, U.S. exports will benefit. Nevertheless, U.S. firms are expected to get around many import barriers by increasing offshore production in target markets and forming joint ventures or marketing agreements.

In addition to deregulation we have examined the effects of the divestiture of AT&T which severed the affiliation of Western Electric and the 22 Bell operating companies on January 1, 1984. This event opened the Bell operating company market to all producers, both domestic and foreign. Most industry analysts agree that Western Electric's share of this market will decline. This is not a new trend Since deregulation, Western Electric's portion of the Bell operating company market has been declining. However, as a result of the compatibility requirement for add-on and replacement equipment, the bulk of the Bell operating companies' market is expected by many industry experts to remain with Western Electric.

The divestiture opened up the Bell operating company market to all producers of telecommunications equipment and eliminated the captive-supplier relationship. The result was to create two markets—one for the companies' own equipment needs and another for customer premises equipment which the operating companies retail to end users. The equipment bought by the Bell operating companies for their own use—such as central office switches and transmission equipment—is expected to be manufactured domestically because it must be compatible with existing equipment and it requires a relatively large amount of service by the supplier. Price considerations are often primary in the customer premises equipment purchases by the Bell operating companies for resale. Therefore, a large portion of the resale market may be supplied by imports.

There is no indication that divestiture is expected to produce a surge in telecommunications equipment imports. In all sectors of telecommunications equipment there are many domestic producers, in addition to Western Electric, who can continue to supply the Bell operating companies. The majority of foreign-manufactured goods purchased in the next 5 to 10 years will likely be in the customer premises equipment sector. For the most part, this equipment will be for resale to the end user. Bell operating company suppliers of large scale, high technology equipment are mainly domestic producers. This relationship is expected to continue because any change would require expensive switching of auxiliary equipment. Further, servicing of foreign-made equipment is not in general as responsive as that for domestically manufactured equipment.

An additional question on proposed nomenclature was posed in the Finance Committee's request. We have provided current and proposed nomenclature for U.S. imports and the recommended changes in nomenclature for the TSUS and for schedule B (including certain communications satellites and also providing for preentry registration of imports of telecommunications equipment). The Commission recommends that the 16 items containing a substantial value of telecommunications equipment in the 1984 TSUSA be expanded (principally in the areas of home computers and radio apparatus) to 38 redefined provisions. In schedule B, the Commission recommends that the current 6 export provisions be expanded to 15 items. The proposed data collection mechanism should provide a more accurate data base upon which to monitor import penetration levels and export trade.

In conclusion, the trade consequences of regulatory changes and the AT&T divestiture are expected to result in U.S. imports increasing more rapidly than exports and a negative U.S. telecommunications trade account balance throughout the next decade. Deregulations should be the driving force in the growth of imports and consumption; the divestiture should play only a minor role.

Technologically, the United States should remain a leader through the next decade but foreign producers are expected to narrow the gap in the long run. Through 1993, U.S. exports are expected to consist mostly of high technology products such as digital switches and transmitters, and imports should be greatest at the low technogy end of the spectrum—telephone sets, key systems, and subassemblies of private branch exchanges.

Senator DANFORTH. The *Carterfone* decision was made in 1968, and it's my understanding that since that time, and particularly since 1977, there has been a significant increase in import penetration for customer premises equipment—that is, the kind of equipment that was within the scope of the *Carterfone* decision. That import penetration between 1978 and 1983 increased from 3 to 11 percent.

What does that indicate to you? I mean it would indicate to me the fact that when a U.S. market is available to everybody and not just to Western Electric it is going to be taken advantage of by everybody at home and abroad.

Chairwoman STERN. I think that's right. You are talking about their very price sensitive items, items to the end user, to the home, if you will. And where the imports do have a price advantage and where the market is open, the customer will seek the least expensive item if it fits the bill. And I think those numbers do reflect the opportunities that these imports found.

Senator DANFORTH. From my brief look at the ITC report—I have to say that I have not mastered the 1 inch or so of material—it's my understanding that the projections are that there will be a significant increase in both switching equipment imports and transmission equipment imports.

Chairwoman STERN. That is correct.

Senator DANFORTH. A 53-percent increase for switching and 72 percent for transmission. Would that largely be as a result of AT&T divestiture?

Chairwoman STERN. I think that you will see a pickup as a result of the divestiture. I think that you have already seen actually the transmission equipment had already shown an increase in import growth in the period before the divestiture as well. Transmission equipment, for example, followed the same pattern of import growth as the customer premises equipment sector did, but not to the same degree. But we did see increases probably resulting from the customer premises equipment, which also requires the transmission equipment. And it also reflected both economic recovery, as well as the deregulation environment up until 1984. But after 1984, it is expected that the divestiture should continue to encourage that trend which we are already beginning to see.

Senator DANFORTH. Now the AT&T divestiture has been analogized to an elimination of a nontariff barrier. Is that a fair analogy in your opinion?

Chairwoman **Stern**. I think that's a fair analogy, yes. It was not a tariff. It did constitute a barrier. However, it was not something which was, on the other hand, limited only to foreign products. It was an across the board barrier so it was not intended to be a barrier to imports.

Senator **Danforth**. Maybe you have some knowledge as to whether there was any consideration of the trade effects of divestiture, but as far as I know, trade never entered into it.

Chairwoman **Stern**. I share your impression. I do believe that both the erection of the system, as well as the dismantling of the system did not have in mind the targeting of imports. To that extent, it was not a nontariff barrier when it was raised or when it came down.

Senator **Danforth**. But the lifting of it has exactly the same effect as the removal of the nontariff barrier for which there was no compensation.

Chairwoman **Stern**. Really not.

Senator **Danforth**. Are you aware of any particular leverage that the United States has to gain compensation from other countries at this point? I mean it would seem to me as though, other than maybe jawboning them, there is no particular reason why other markets would open themselves up to U.S. telecommunications equipment.

Chairwoman **Stern**. Senator Danforth, I, personally, am not aware of such leverage. I have not studied the negotiating history, however, of this very important sector of our economy. However, again, I share the same impressions that you have. That at this point there doesn't seem to be that leverage, absent the bill which you are considering.

Senator **Danforth**. Thank you very much for your testimony.

Chairwoman **Stern**. My pleasure.

Senator **Danforth**. The next witness will be Harald Malmgren of Malmgren, Inc.

STATEMENT OF DR. HARALD MALMGREN, MALMGREN, INC., WASHINGTON, DC

Dr. **Malmgren**. Thank you, Mr. Chairman.

I'm honored to be invited by this committee to appear as an independent witness. I have a statement which I prepared that I would like to submit for the record, and then just highlight the points that I would like to make.

My interest in this subject began with a biased point of view. That is to say I was an expert witness for AT&T in the court case. On December 14, 1981, I testified before Judge Harold Greene in the matter of what would be the international implications of the divestiture, if it were to take place. That was before the 1982 Justice Department settlement.

The reason I want to review that briefly, just for a moment, is to say simply that it was then clearly foreseeable what has taken place since. There was a policymaking process tragedy in that we didn't take into account what was clearly foreseeable.

It was then argued—and I argued myself—that the divestiture should be viewed in an international context; particularly, taking into account the competitive pressures from other countries, the status of those competitive pressures, and the fact that governments throughout the world were at that time not only reassessing economic strategies in general, because of all the troubles of the 1970's, but had focused in on this particular area—the computer and communications interface.

There had been reached the conclusion by most governments that this broad interface was vital to their national interest; that governments must play a strong and direct role to work with private enterprises rather closely in the development of relevant technologies and their commercial application. In other words, this whole sector had risen in priority gradually in the 1970's and had become a major priority area of almost all governments in the early 1980's, developed and developing countries alike.

It was my opinion then and remains my opinion now that the most important influence of the governments in most countries was not exercised through direct official assistance through R&D—that is, not through subsidies directly, but rather through coordination and integration of private industry, independent research facilities, universities and government agencies. I told the court that in many nations cooperation, coordination and technology sharing are viewed as procompetitive. Thus, in the United States we often tend to think of intraindustry cooperation and integration of effort as anticompetitive. The governments of most of our competitors considered it to be procompetitive.

That is where one of the big problems arose. I predicted with divestiture that the new AT&T would have to restrict the flow of its technology—which had previously been rather liberally made available both to domestic and foreign producers.

Mind you, I also said that the main damage of that would be to domestic producers rather than to foreign. It would have to seek to embody its technology and equipment for sale by AT&T to replace the revenue loss of the operating companies to build a new base of revenue based on the technology of Bell labs. Therefore, it would have to make a strong effort to increase sales and equipment at home and abroad. And to succeed in a global market endeavor, I told the court that I felt that AT&T would have to engage in a growing variety of international joint ventures and greater sharing of technology with enterprises in other nations, not this nation, to penetrate foreign markets.

In the meantime, I also said at that time that foreign producers would be better positioned than U.S. firms to sell equipment to the new divested, deregulated operating companies in the United States because many foreign firms at that time had already reached a scale of production and productivity required to compete head on with AT&T in an open market situation. In other words, the starting gun that was fired in 1982 by the settlement put the foreign competition in a better position relatively.

There were concerns in the executive branch in 1981 and 1982 about the potential dangers to Bell labs, thus to American technological leadership, and even about the national security consequences. But these wider international questions were not given attention by the Justice Department.

In effect, the divestiture formula and its timetable failed to take into account the international competition and the fact that the American telecommunications market was a global, not a national, marketplace.

In other words, what I have described has pretty much taken place. And a lot of that is in the ITC report that you have. There was a policymaking failure in Washington. It was not a matter of failure of party politics. Nor was it a matter of failure of a particular agency. It was simply a matter that the policy process did not pull together the national and the global issues and potential consequences.

Thus, before the 1982 settlement, the U.S. Government should have devised a strategy for enhancing American competitiveness and offsetting the competitive disadvantages that were foreseeable in an abrupt shift in the structure of their network and of the communication services of our country.

I don't want to leave only criticism to the executive branch. If I may, I would like also to mention the fact that in Congress there have been a number of proposals which also would have done further damage. This is also true in the regulatory commissions and in the courts since the 1982 settlement.

For example, the proposal, S. 1660, that was before Congress earlier this year, would have done even more harm to the American competitive position because it would have changed the economics of the situation for the major producers, major communication companies. The R&D side of their activities would have encouraged bypass technologies, which are already taking place, but accelerated their development in the long run and would have had damaging consequences for consumers.

The tragedy of our policymaking process lies in the continuing tendency even now to devise policy alternatives without first considering their worldwide effect. This then leads me to the present context. There are certain issues that I would like to call to your attention. Some of them are obvious, but I want to explain the complexity of these issues to give you something to think about and to ask our executive branch friends to deal with.

First, the reality continues of heavy government assistance, intervention and guidance in the world telecommunications markets.

Markets of other nations are often closed to foreign suppliers completely or major segments of those markets cannot be penetrated because of state monopolies, national standards set with the approval of government, government purchasing policies and so on. The list is before you.

We need to seek changes in national laws, regulations and policies of other governments. But this is a technical field and there are no simple solutions. For example, if we sought internationalization of technical standards, we would have certain problems. First of all, the bodies that are set up for that purpose, like the International Telecommunications Union, have become highly politicized and they are not very useful. The EEC governments are planning new standards, but they are not planning standards that the United States could meet, but rather standards that European companies could share.

But beyond that, there is another question. And that is: To what extent can companies competing internationally continue to seek to differentiate their own technology in order to gain advantage if at the same time we want international standardization? That brings to mind the case of IBM versus the EEC. There is a quarrel. IBM says they want to differentiate their product and announce at the suitable time their own technological characteristics. And the EEC says in that case we can't have compatible equipment plugging into yours until it's too late. Therefore, IBM must announce its technical specifications early. Do you want standardization or not?

We gain by not having standardization in some cases, and we lose by not having it in others. It's a controversial question.

Similarly, if we want to examine other governments' R&D support policies, we will have to accept foreign government scrutiny of our own. Our own programs in DOD, NASA, the national laboratories and other agencies would have to be looked at by other governments.

In the terminology of a national security specialist, much of computer communications technology is dual use, and government-supported programs do have commercial consequences, even in this country.

Second, American policies which regulate transfer of technology abroad and use of that technology in other nations need to be reassessed. This is a matter of bargaining, because we do have something to bargain about, although it will be highly controversial.

Let me explain what the problem is. Our export licensing and control policies impede our competitiveness in at least two major ways. First, our delays in licensing and our continuing strictures on foreign use discourage buyers in other nations to encourage foreign governments to seek alternatives or to develop domestic capabilities.

The second, and in my view more important, problem is the potential for extraterritorial intervention by the American Government in the future. This is encouraging foreign governments and private enterprises to seek alternatives now to avoid future disruption of their communications and information processing system. I think that is becoming clear in a number of countries. I know I'm quite aware of cases in Europe where that policy is now being espoused by heads of government to their major companies.

But you will not make headway in international trade in this area until we completely reorient our export control systems to take this problem into account. Rather our present policies are intensifying efforts by foreign enterprises to delink from U.S. technology where they can.

Third, our export financing policies will have to be reassessed. And I simply note that in this case American multinational enterprises have long since learned that sales from their European subsidiaries to China or other developing countries are far easier to make than sales from the parent in the the United States. I will give you the example of ITC, which has recently had a major sale in China from its Belgium subsidiary; not from the United States.

Fourth, our present array of regulatory and executive policies have to be made coherent. If we are going to bargain with other countries about what they do, we will have to make some adjustments in what we do. It doesn't mean it will be reciprocal, but there certainly will be changes necessary not only in the hardware, but in the software that drives the hardware. For example, our laws on software protection are completely inadequate. The problem is you need something international in character.

Finally, we must stop devising regulatory and legislative changes without considering the international competitive circumstances. The past and the present predominance of domestically oriented agencies must be counterbalanced by globally oriented policies imposed upon them.

I note in the statement a few points about the ITC report. I think it's a good report, but it does leave some unanswered questions. For example, it doesn't pay enough attention, I think, to who the new buyers are in the new situation. We not only have the new operating companies who are free to buy from anyone—they can buy foreign—but we have new carriers in the new deregulated situation. We also have noncommunication companies carrying on communication services such as Merrill Lynch, American Express, and information companies. We have the railroads entering the communications business by using their right of way to lay fiberoptic cables. And we have also the new phenomena of intracorporate bypass, which, I believe, will grow very rapidly because of the economies of scale of handling all information systems in a secure way within a company on your own grid, and then offering services to others.

So these new buyers are spreading in number. There is a proliferation, more than seems from the report. I think the demand will grow rather faster.

The other point I would like to make is that in overall terms of the economy, investment as a percentage of GNP hasn't changed much for the last 10 or 15 years. Nonetheless, investment growth has been slow. What has also happened is that the composition of investment in our economy has been shifting. More and more of that investment is going toward this communications computer sector. I would call this the infrastructure of the next technological revolution, the new grid that provides productivity for our factories and our farms and our services.

Investment in steel and the basic industries has been declining relatively, while the investment of this sector has been growing rapidly. I think that this rapid growth will continue for the next several years and have a profound effect on the economy, and that market will grow, I think, rather faster than is visualized in the report of the ITC.

Thank you.

Senator **Danforth**. Thank you.

[The prepared statement of Dr. Malmgren follows:]

Statement of Dr. Harald B. Malmgren Before the Subcommittee on International Trade, Committee on Finance, U.S. Senate, June 25, 1984

THE CHANGING COMPETITIVE ENVIRONMENT OF THE AMERICAN TELECOMMUNICATIONS INDUSTRY

I am honored to be invited by this committee to express my views on the outlook for the American telecommunications industry.

On December 14, 1981, I testified on behalf of AT&T before Judge Harold Greene, in the U.S. District Court for the District of Columbia, in the matter of the Justice Department antitrust case against AT&T. I appeared as an expert witness on the international competitive context in which AT&T then functioned, and expressed views on the implications of divestiture and restructuring of the AT&T system.

I would like to summarize for you the views I set out at that time, in order to show that the recently experienced evolution of domestic and worldwide telecommunications markets was clearly foreseeable more than 3 years ago—and clearly foreseeable before the ill-fated 1982 settlement between the Justice Department and AT&T.

I said in court that it was "my firm conviction that the markets in which the Bell System operates—as well as Bell's ability to operate in those markets if it were fragmented—must be assessed in a global context. The assessment must be made in an environment in which the parameters of competition are determined by technological change and by government policies of various nations which are aimed at shaping the direction of that change. Moreover, I strongly believe that any structural reorganization of the telecommunications industry in this country will have a profound effect on the competitiveness of a major part of the high technology sector of our economy. This effect goes far beyond Bell itself, for the role of computers and communications technology later in this decade, and in the next, will affect the entire structure of our economic activities and our job needs as we develop "factory of the future" and "office of the future" technologies, and as our burgeoning services sector becomes interwoven by computer memories and sophisticated communications systems."

I explained at that time that, spurred by many economic shocks and slow growth of the 1970's, governments throughout the world were reassessing economic strategies, and stepping up efforts to guide industrial and technological change. Increasingly, the computer-telecommunications interface came to be considered in many capitals as the highest priority area in developing new competitive thrusts, as well as in improving productivity and quality in traditional industrial and service sectors. In other words, a conclusion was reached in many parts of the world that progress made in the telecommunications-computer interface would provide the basis for modernization and improved competitiveness for the entire national economy.

In this process of rethinking in most capitals, there has emerged a view that governments must play a strong and direct role and work closely with private enterprises in the development of the relevant technologies and their commercial applications.

It was my opinion then—and it remains my opinion now—that the most important influence of governments in most countries has not been exercised through direct official assistance to R&D, but rather through coordination and integration of private industry, independent research facilities, universities, and government agencies. I told the Court that in many nations, "Cooperation, coordination and technology sharing are viewed as procompetitive. A closely supervised integration of effort is seen as a means of reducing risks, cutting down on duplication of effort, exploiting division of labor, and assuring adequate finance."

Thus, in the United States, we often tend to think of intra-industry cooperation and integration of effort as anticompetitive in the development of new technologies, especially in this sector; the governments of most of our competitors consider it to be procompetitive.

As regards what was then called the Bell System, I stated to the Court that "It seems evident to me that the Bell System has overcome the institutional impediments to R&D in our country by achieving through its internal structure what other countries are trying to do with complex efforts to coordinate and direct the R&D efforts of various manufacturing enterprises, research labs, service entities, and government agencies."

Thus, while we were considering the dismantlement of the Bell System, the pervasive trend elsewhere was toward emulation of the integrative strengths of the Bell System. I expressed the view that AT&T had "evolved a uniquely American alternative to the centrally guided systems of other nations." Indeed, the Bell System then had a unique advantage, the greater efficiency and freedom of action derived from acting as a private enterprise.

In this connection, I observed that Bell Laboratories, America's preeminent scientific institution, had been supported by the large, steady earnings flow of the entire Bell System. On this basis, Bell Labs had been able to generate many scientific breakthroughs and commercial innovations, and Bell Labs had liberally made these technologies available to American and foreign competitors. With divestiture, I predicted that the new AT&T would have to restrict the flow of technology out of Bell Labs, and instead seek to embody that technology in equipment for sale by AT&T. There would have to be a strong effort to increase sales of equipment at home and abroad, to replace gradually the sales volume and earnings lost by divestiture of the operating companies.

To succeed in a new global endeavor, I told the Court then that I felt that AT&T would have to engage in a growing variety of international joint ventures and greater sharing of technology with enterprises in other nations, to penetrate foreign markets.

In the meantime, foreign producers would be better positioned than U.S. firms to sell equipment to the new, divested, deregulated operating companies in the U.S., because many foreign firms had already reached the scale of production and productivity required to compete head on with AT&T in an open market situation. Scale of competitors was an essential factor when the starting gun was fired by the Justice Department's settlement in 1982. Foreigners were already better placed at that moment in time than most American firms.

There were concerns in the executive branch in 1981 and 1982 about the potential dangers to Bell labs, and thus to American technological leadership, and even about the national security consequences, but these wider international questions were given little attention by the Justice Department.

In effect, the divestiture formula, and its time table, failed to take into account the international competition, and the fact that the American telecommunications market was a global, not a national marketplace.

Thus, much of what I had suggested to the Court would happen has happened. The problems which give rise to complaints from our industry now are problems that should have been foreseen 3 or 4 years ago.

There was a policymaking failure in Washington. It was not a matter of failure in party politics, or in a particular agency. Rather, the policy process simply did not pull together the national and global issues and potential consequences. Our government acted without adequate attention to the intimate interaction of our own economy with that of the rest of the world—and without adequate attention to the strong role of governments in most of the rest of the world marketplace.

Thus, before outlining the 1982 settlement, the U.S. Government should have devised a strategy for enhancing American competitiveness and offsetting the competitive disadvantages that were foreseeable in an abrupt shift in the structure of our communications networks and services. If greater competition was deemed to be necessary, then far greater thought should have been given to who the new competitors would be, and how American firms would fare among them.

It would not be fair to limit my criticism to the executive branch alone. Some efforts have also been made in Congress and the regulatory agencies, since the 1982 settlement, which would have hampered further the competitive evolution of the American telecommunications industry. For example, I wrote letters to the Majority Leader and to the Minority Leader of the Senate on January 20 of this year, expressing my personal dismay with S. 1660 and H.R. 4102, regarding proposed limitations on access charges. I again stressed that there was danger from such proposals of further erosion of our industrial base and our leadership in leading-edge technologies. I said in those letters that "Meeting foreign competition goes far deeper than just winning an end sale; it goes directly to the ability of U.S. firms to maintain the demand and revenue streams necessary to fund research and create new jobs." The problem in such proposals lay in the nature of the access charge solutions proposed, which might have favored end-consumers briefly, but which would have also proven uneconomic for the industry as a whole, and which would have greatly accelerated the drive for bypass systems, which would hurt consumers in the long run by raising costs of the common network. Moreover, accelerated opening of bypass networks would no doubt provide yet another new area for those foreign competitors ready to provide volume supplies based on existing large scale of production in their own domestic markets.

The reality of our telecommunications industry is that it must compete in a global framework, both at home and abroad. Every domestic action—every legislative step, every regulatory change, every court decision, affects American competitiveness. There can be no isolated, insulated actions that have purely domestic effects.

The tragedy of our policymaking process lies precisely in this continuing tendency to devise policy alterations without first considering their world-wide effect, and the competitive consequences for the U.S. industry.

This then leads me to the outlook for the American industry. Certain issues should be considered in making policies for the future:

First, the reality continues of heavy government assistance, intervention, and guidance in the world telecommunications markets.

Similarly, if the U.S. Government wants other governments to change their forms of intervention, it will have to accept foreign government scrutiny of American government policies and practices. Thus, R&D assistance, and cooperation, by DOD, NASA, National Laboratories, and other agencies would have to be looked at to determine the extent of commercial benefit from U.S. Government assistance. In the terminology of national security specialists, much of computer-communications technology is "dual-use," and government programs do have commercial consequences.

Second, American policies which regulate transfer of technology abroad, and use of that technology in other nations, need to be reassessed in order to ascertain whether such policies are counterproductive to American long-term interests. In particular, our export controls and export licensing requirements stand as a major impediment to American competitiveness in foreign markets, in at least two major ways. First, our delays in licensing and strictures in foreign use discourage buyers in other nations, and encourage foreign governments to seek alternatives or develop domestic capabilities. Second, the potential for extraterritorial intervention by the American Government in the future is encouraging foreign governments and private enterprises to seek alternatives, to avoid future disruption of their communications and information-processing systems.

We shall not make major headway in world markets if we maintain the present orientation of our export control system and our emerging policies on technology transfer. Rather, our present policies are intensifying efforts by foreign enterprises to de-link from U.S. technology and to seek autonomous technologies of their own.

Third, our export financing policies will have to be reassessed if there is a real intention to promote major project sales in developing countries. American multinational enterprises have long since learned that sales from their European subsidiaries to China or other developing countries are far easier to make than sales from the parent in the U.S.

Fourth, our present array of regulatory and Executive policies have to be made coherent, if our negotiators are to have any positive results in trade talks with other governments. We shall have to bargain to get results, but that will mean changes in the U.S. as well as abroad—not necessarily on a reciprocal basis, but certainly involving some degree of adjustment in what have been considered domestic matters in the past.

Finally, we must stop devising regulatory and legislative changes affecting our telecommunications industry—both equipment and services—without considering the international competitive consequences. Justice, the FCC, and the various Executive agencies involved with trade and finance need to get their thoughts together. The past and present predominance of domestically oriented agencies must be counterbalanced by globally oriented policies imposed upon them.

The ITC report which has just been released provides some general background for your evaluation of the economic scope of the industry, and its foreign competition. I have not had time to study it adequately. However, I would note that it probably does not give adequate attention to the fundamentally changed economics of AT&T, or of the new operating companies. The operating companies are now free to buy from any supplier, and are considering even producing and selling equipment themselves. I do not think it adequately examines the fact that foreign competitors are not only exporters to the United States, but are producing inside the United States as well, some of them on a very large scale, with others seemingly ready to expand U.S. production. The ITC report also does not adequately consider the regulatory changes, and proposals for changes, since the 1982 divestiture of AT&T. Moreover, since divestiture has only in 1984 taken effect, past trends are a poor guide to the future.

We do not yet know enough. But we can say with confidence that we have been very careless, and very myopic in our policymaking regarding the American telecommunications industry. That has been damaging to our national economic strength, but we can still turn the situation around, by more coherent public policy thinking, and better global strategies.

Senator DANFORTH. Do you think the ITC report attempts to quantify the effects of the divestiture on trade in telecommunications? Do you think that the ITC report understates, overstates, or correctly states it?

Dr. MALMGREN. I think it may understate the import possibility, the import potential in a number of areas. The consumer premises equipment obviously has already been moving rather rapidly, and there has been a rise to something like 18 percent penetration now.

On the overall, the penetration is not that big in this economy yet, but in many of the areas, the potential is there for significant inroads unless the competitive circumstances here are more favorable. That means that the scale of producers here has to be fairly big. The technology change has to be fairly rapid, which means high profit requirements, which means that the regulatory process shouldn't squeeze them too much; that we should recognize the need for rather rapid movement in R&D. But also that they have to develop export markets as well. Therefore, the export market side of our possibility of strengthening the base at home, getting the scale necessary, is very important. I suppose you have been thinking about that quite a bit in making the proposal for your own bill.

Senator DANFORTH. How will the openness of the U.S. market compare with the openness of other markets?

Dr. MALMGREN. Well, it's clear, and I don't think there is any real argument about it, that most of the markets are closed or to the extent they are open, they are open in very narrowly defined ways. But there are a couple of changes going on. First let me say that the British system is being changed. And, theoretically, at least the Japanese system will soon be changed. There is already evidence that the Japanese themselves believe the system will be deregulated along American lines, restructured along American lines, because there has been a new company formed already to set up an alternative communication system in Japan. I think you will have other witnesses talking about that.

In Britain, there is an attempt to restructure and decentralize as well. So far, the British experience has been not so successful. But there is hope in the EEC to integrate the British and the other European producers in some new direction. I think that is a danger. That is to say that there is an attempt to construct a European-wide market, and that could be a market which is somewhat closed to outsiders, such as American companies unless they are inside.

What is happening, though, now is that there is a second level of activity taking place: Our companies are finding partners in other countries, in Japan and in Europe, to do joint development. That is often economically sound, but it is also a desperation measure on the part of some companies. That's the only way they can get into those markets. Not only has AT&T arranged with Phillips and Olivetti, but you have the example of IBM negotiating with Italy now, with a likely announcement any day. And there are other companies.

And certainly ITT must be considered at least as much a European company now as an American company, because of the very big base ITT has in Europe and the very big R&D of ITT that takes place there.

So there is an internationalization of this market which is accelerated by the policies of other governments. In the developed countries the PTT systems generally don't buy much from outsiders except where the technology is very good. You know, clearly superior. The most extreme cases have been the Japanese and the French and the Italians. The German Bundespost is also rather restricted. There is intense use of standards as well as other policies to make it difficult for outsiders to be party to internal development in projects. So there is clearly an unbalanced situation in the world marketplace. It was never addressed by U.S. negotiators. It was simply not addressed in the decision of 1982. And it should have been. Frankly, it's a little bit——

Senator **Danforth**. The horse galloping down the path.

Dr. **Malmgren**. I say in the final sentence of my written statement that this has damaged our national economic strength, but we can still turn the situation around with more coherent public policies and some kind of strategy. And I listed some of the elements that would be involved. But I warn you, this committee, that the strategy that we take internationally will involve some soul searching about our own policies. And we will have to bargain about some uncomfortable issues, like extraterritorial controls under export controls, or like some of our protection of software and other issues. There is a bargaining situation.

The bargain is going to require bigger concessions on the part of other countries, but some on the part of us as well. It cannot be done any other way because a lot of what we are doing is forcing others to become more autonomous. I think we are encouraging some of the foreign governments to play even bigger roles by our periodic reach into their system.

Senator **Danforth**. Senator Bradley.

Senator **Bradley**. Thank you, Mr. Chairman. I would ask to have a statement put in the record.

I think maybe it's this last point that you are referring to where you say our present array of regulatory executive policies have to be made coherent if our negotiators are to have any positive results in trade talks with other governments. We shall have to bargain to get results, but that will mean change in the United States as well as abroad. Not necessarily on a reciprocal basis, but certainly involving some degree of adjustment.

What are you referring to there?

Dr. **Malmgren**. Well, such matters as export controls and extraterritorial jurisdiction. But it can get into other questions such as protection of software. We have been relying more or less on antiquated rules. And we stick with a position that really doesn't match even what we ourselves think ought to be done.

The relationship between software and hardware, how much you embody in a machine that can make something and how much you send in the form of an instruction from another place, is the question of the relationship between software and hardware. Software is the brain part of what you are telling the machine to do. And if you have more of that brain in one place than in another, we have got to think how do we protect the software content internationally in a more sensible way. We are using copyright laws, but they are really irrelevant, because this is a much more intricate field than copying a book or a poem or a music score.

We have to change also the way in which we approach the regulatory requirements, the licensing certifications. All of this whole area is ambiguous and it is handled by people who know nothing about the world market. We have, in fact, a lot of ignorance dominating policymaking.

Senator **Bradley**. I want to read a statement to you and ask if you agree with this statement.

> This country has got to stop treating trade policy as the step-child of foreign policy or domestic economic policy. Put bluntly, we don't have a trade policy. In the interdependent world, all of our domestic policies have an effect on industry's ability to compete internationally. We have no idea what our myriad of policies for defense procurement, small businesses, subsidies, tax breaks and all of our trade restrictions have on the structure of the U.S. industry or its ability to compete internationally. The divestiture of AT&T is another in a long list of policy changes which were taken without considering the implication for trade. Until this country adopts a more coherent trade strategy, we will be forced to use whatever leverage the Congress can muster on a piecemeal basis to open up the foreign markets.

Do you agree with that?

Dr. **Malmgren**. Yes, I think I do. Regarding what you mean by what Congress can do on a piecemeal basis, I have to see what the proposals are. But I think that is right.

Senator **Bradley**. Well, they are piecemeal.

Dr. **Malmgren**. But, Senator Bradley, I think you and I have discussed this in the past before this committee. Before you came in, I was describing the court deliberation and the fact that I had laid out to the court before the 1982 settlement most of these problems that would arise if divestiture took place without taking into account other consequences. In my view, the right way to have gone about it—it's water over the dam—but what we should have done was thought through a trade negotiating strategy that was convergent with the restructuring domestically. And there should have been a timetable that was somehow interactive. We should, at that time, when trade was smaller, sought to unbind some of the tariffs. It is already becoming expensive to do this now, as in the idea embodied in Senator Danforth's proposal.

But we should have been thinking how do we restructure taking into account the foreign competition. And the courts were well aware. Justice Department chose to ignore all these issues saying, well, we are not concerned with that; we want more competition; we don't care where it comes from.

Senator **Bradley**. So you basically say that before divestiture was granted that it should have taken place over a longer period of time and it should have taken place in conjunction with attempts to get other markets open. Is that right.

Dr. **Malmgren**. That is correct.

Senator **Bradley**. In your last point you say that we have to stop devising regulatory, legislative changes affecting our telecommunications industry without considering international competitive consequences. And it's the next sentence that I want to ask about: "Justice, the FCC, and various executive agencies involved with trade and finance need to get their thoughts together." How?

Dr. **Malmgren**. Well, I don't want to make an organization proposal because they can simply sit down in the same room and exchange views. That is conceivable. But in my experience of nearly 20 years with the executive branch and with this committee as adviser in this field, I have yet to know about a case where the Justice Department listened to anybody on these matters. Nor do I know of any case where the FCC actually sought the advice of the trade negotiators or the Commerce Department as to what would make international sense.

Senator **Bradley**. So you are suggesting no specific institutional remedy, but just more talk.

Dr. **Malmgren**. I think it is possible for sensible people, if they listen to each other, to come to terms.

Senator **Bradley**. But doesn't that proceed from the top? You are saying that every administration in the last 20 years hasn't put an emphasis on the international dimension of communications policy.

Dr. **Malmgren**. Well, I think correctly spoken, Senator Bradley, every administration, regardless of party, has failed to interlink commercial consequences, whether it's telecommunications or other industrial policies, with our international competitive circumstances. We made many decisions. For example, in the antitrust field, we have often decided to restrain cooperation of two or more firms, and so the firms have then chosen to go to foreign companies to make a joint venture, pushing our technology out, which makes no sense whatever. It would have been better to let them cooperate internally than pushing the technology to another nation. We have met many examples of this.

But it's a failure at the top to understand that we need to integrate the international and the domestic in our thinking, and that most of the traditional thinking on antitrust or on cooperative activity in the economy is antiquated at this time.

Senator **Bradley**. One last question on extraterritoriality. You say that that is something that we will have to give on. And that you say that failure to give could be damaging to our longrun interest in telecommunications. And could you explain once more why?

Dr. **Malmgren**. Well, let me put it this way. Telecommunications and computers and the broad information processing interface is conceived as vital to economic progress in almost every country, because it's the new infrastructure, like the railroads were 100 years ago, to provide productivity improvement to the factory, the farms, and services. It allows you to develop the newest technologies and be on line with technologies in other parts of the world. In that case, then if you feel, as the government—let's suppose Timbuctu—the communication system you have, the computers and the information processing capability you have, could be shut down in some specific areas at some future time by the United States, if you use U.S. equipment or technology. Then you bloody well will not use that technology. You will find somebody else's, even if it cost more and it is less good.

There is this problem in other capitals of the world of having the fear that, later, somebody can reach into what is the heart of your system, the part that pumps the blood to the rest of the body. And I think that is a fundamental problem we have to face. That the more we try to reach into other nations decisions the more we will frighten off others from using what it is we can reach, which is our technology—and the more we encourage others to develop their own autonomous technologies.

So we have a fundamental problem in export controls. We want to deny our technology to certain parties around the world, but the process of pursuing that objective is damaging to our own sales abroad.

Senator **Bradley**. So that you not only damage the sales of goods produced in the United States abroad, but you push our own technologies abroad and encourage other countries to develop their own technologies.

Dr. **Malmgren**. Yes.

Senator **Bradley**. Or to purchase from other countries that are less likely to interrupt their supply.

Dr. **Malmgren**. Yes. I even think we get to the further problem—it's more subtle and most companies will not admit to it—but there are plenty of times when companies that have a base in several places—here, Europe and Japan—will think before they decide to lodge that technology in the United States with a patent or say this is an American R&D result. They may well decide, well, let's just dump a new idea through the international telecommunications grid and the computer to some other point and call it a French invention or a Japanese invention, because that way we keep out of the American control system. I think that is going on in some companies. That is not good for America.

Senator **Bradley**. It certainly is not. I find that very interesting. Do you have evidence of that?

Dr. **Malmgren**. As I say, most companies don't like to discuss it because it's not very patriotic, let's put it that way. But it's a natural bias in business planning. It's common that companies will do this. I am aware of it happening, but I'm not at liberty to discuss it.

Senator **Bradley**. Thank you, Mr. Chairman.

Senator **Danforth**. Senator Grassley.

Senator **Grassley**. I just have one general question. Considering the increased market share of foreign competition in our domestic market, is it possible to delineate—and if it is, then that is what I would like to have you do—the extent to which increased market share comes from what might be generally recognized as superior technology from abroad as opposed to just our ability to compete pricewise?

Dr. **Malmgren**. I have looked at the technology in this broad sector. It's very broad. I've looked at it with some care over the last 3 or 4 years. I would say that the American technology is generally superior in most of the areas of telecommunications, computers, information processing, including the software.

But there are some areas where the technology is converging, particularly with Japan. For example, in the area of photo optical transmission, the so-called fiber optic method of transmission, long wave lasers and fiber optic technology itself, there seems to be considerable progress in Japan, that is, a degree of progress that it is converging with ours. Maybe even in some respects accelerating ahead of ours.

Another area is in galium arsenide which is the base for the next round of chips, and miniaturization of memory. In that area, we and Japan have made substantial advances recently. But it seems that Japan can produce in volume a lot cheaper in that area than we can so far. So there are little areas where Japan is perhaps pulling ahead. But generally the American technology is superior.

But I don't think it's useful to focus on what we most see in our daily life because that's a kind of market that is already evolving rather rapidly and may even get saturated pretty shortly, such as consumer premises equipment but rather on the hidden market, the real guts of the telecommunications network, the transmission equipment, the switches, the more sophisticated infrastructure of our economy. In that area I think America is very strong, but for a few cases. But if we continue to haphazardly develop our policies, then we will see a stronger and stronger position of Japan in that wider race. And they will begin to pull ahead in a number of areas. We are still very strong, and will remain so for a number of years. But it is very important to remember in this area that scale of production and use is very important, not only in R&D development in the major systems, but in producing something cheap, you need a very large scale. Just a few companies can service the entire market in some of the areas that we are talking about. And that's something we just haven't quite reckoned with. The Japanese have specialized in volume production: If we can make it, then let's make it in large volume from the start. It's a very different way of approaching this field than we have and that's why they enter our market real cheap.

Senator **Grassley**. So the answer is that most of the increasing market share is going to come as a result of their being able to produce cheaper products or ones that sell here more competitively.

Dr. **Malmgren**. In volume. That relates to our policy.

By the way, let me just say that in the bargaining area there are other areas we can use in relation to telecommunications. It has always been the case that a nation can bargain trade in general for specific objectives. I have no proposals in mind now, but in a wider negotiation there are many other kinds of issues that can be brought up and there is room for bargaining.

So if there were a multilateral trade negotiation starting tomorrow, there would be plenty of room to bargain. And there would be room to be difficult in other areas.

That's why I said that whatever we do, bear in mind there are some uncomfortable aspects that will affect this sector, and will cause us to review our own policies. And this will not go down well with some of the traditionalists

Senator **Danforth**. Thank you very much for your return engagement. As always, you have been very helpful.

Dr. **Malmgren**. Thank you very much.

Senator **Danforth**. The next witness is Lionel Olmer, Under Secretary for International Trade, Department of Commerce.

STATEMENT OF THE HONORABLE LIONEL OLMER, UNDER SECRETARY OF INTERNATIONAL TRADE, DEPARTMENT OF COMMERCE

Under Secretary **Olmer**. Thank you, Mr. Chairman.

I have a rather lengthy statement for the record. I would like to introduce it and make a few brief oral remarks before making myself available for questions.

We have in our country a great domestic and international telecommunications industry, one that creates jobs, that is known for its quality, reliability, and product innovation. Deregulation, which we have been pursuing with some vigor in recent years, is going to increase the value to Americans generally of our telecommunications industry. Due to the ripple effect, this includes the promotion of greater efficiencies in workplaces of industries outside of telecommunications.

Deregulation does bring with it some problems in terms of our foreign trade interest. Our markets are open and foreign markets are not. Over time, that is going to reduce the ability of our industry to compete because foreigners will have more sales opportunities. They will have their own protected markets, and they will have our already open market which will enable them to develop economies of scale which will be difficult for our industry to match.

We are today the world's acknowledged technological leader. And yet our share of global exports in telecommunications products is about one-eighth of the total world's telecommunications. Despite the fact that looking at the total size of what our companies produce, we produce nearly a half of all products in the telecommunications field.

We only export 7 percent or so of our products, whereas by comparison at the other end of the scale, Sweden exports 65 percent. As you know, our balance of trade went from plus to minus several hundred billion dollars in the space of 3½ years. And with the trends that I see, especially in Europe, it could well be a negative $2 billion trade deficit by the end of this decade.

The reasons for our limited exports and the telecommunications deficit that we are beginning to suffer are not solely due to closed markets abroad. Our market has been so large that many companies weren't tempted to go abroad. They had no need to. But deregulation is spurring product innovation and it is obvious that U.S. companies have telecommunication products which businessmen in many, many other industries and countries desperately want.

But their governments are not likely to permit access to new products absent some powerful inducements that are not yet visible to me.

The Japanese market is becoming private, and we will have to watch the process by which it becomes private very, very closely. We properly claimed a substantial victory when the Japanese Government decided not to do what, in my view, it shouldn't have attempted to do, by imposing domestic content requirements on foreign participation in the emerging industry of value added networks.

For the time being, it seems to me that we have that problem shelved. But I would be less than candid if I didn't inject a cautionary note on that score. For U.S. companies to succeed in Japan—and there are immense opportunities for them to do so—in areas indirectly related to telecommunication, in the information sector, they can do it but they are going to have to work at it very, very hard, and they will need the backing of the U.S. Government through thick and thin.

In Europe where the market potential in the aggregate is nearly as large as the market in the United States, the telecommunications market in my view is going to remain a closed door to American based corporations. Europe, you must remember, is not a cohesive market. In total, the European Community accounts for roughly 37 percent of the world volume annually in telecommunications. But you can't look at it only that way. You need to look at 10 individual countries that operate very independently of each other. Collectively, they have an enormous fear of being run over by the United States or Japan. There is no way, in my view, that the European Community will open its markets until and unless they first manage to create a more cohesive European market which will give them the economies of scale that are necessary to compete internationally. And pending that great day, which is by no means assured, they are not likely to look benignly on competitive U.S. companies seeking access. Indeed, I think a further level of concern is warranted for what may be done to European based American companies, even those companies in Europe that provide substantial employment for European workers, that provide immense sums for research and development to be conducted in Europe, that are responsible for producing new products and much innovation throughout Europe. They are not looked upon as European companies. And in my judgment, they will not be dealt with in a policy sense as anything other than American based companies because in the words of a European official with whom I recently spoke—"the important decisions are made in America. And that's not good enough for Europe."

So what are the options open to the American Government? Well, we could continue to pursue bilateral negotiations, something like the NTT agreement, that over the course of time has been of benefit. Not as much as we would like to have seen, but it is working. And ideally, it is going to work even better as long as we can keep people like Dr. Shinto at its head, and so long as American companies increase their efforts to become Japanese-like in trying to sell into the Japanese market.

Well, we can pursue the bilateral route with other governments. But as I have said, I believe that will be a near wasted opportunity in Europe. We could continue to press on trying to get other governments to join the Government Procurement Code. The European telecommunications entities are government-owned monopolies; they are fat. They may not be happy, and some of them may not be dumb, but they are not likely to agree—they haven't so far—to repeated requests that they sign up for the Government Procurement Code.

So there is the bilateral route and there is the continuing effort to pursue the Government Procurement Code. A third option is work with you and your committee in crafting a bill, like the one you have introduced, that is in keeping with our international obligations and yet does the job. And the job, I would like to say, in closing, Senator, the job is to provide equivalent market opportunities for what is a great industry that has well served America and the world in terms of technology and products and job creation.

Thank you.

Senator **Danforth**. Thank you, Mr. Under Secretary, very much.

[The prepared written statement of Under Secretary Olmer follows:]

STATEMENT OF LIONEL OLMER, UNDER SECRETARY OF INTERNATIONAL TRADE, DEPARTMENT OF COMMERCE

INTRODUCTION

Mr. Chairman and members of the subcommittee, I am pleased to be here today to participate in these hearings on the very important issue of trade in telecommunications products and market access problems related to the divestiture of AT&T.

Under President Reagan's leadership, we are in the midst of the deregulation of our telecommunications industry. We seek to minimize government involvement and place maximum reliance on private enterprise and initiative. We continue to believe that the best way to enhance technological innovation and effeciency is through competition by the private sector with the least possible government intervention. In other words, free trade by firms competing against each other fairly.

Today, more than ever, the telecommunications industry plays a central role in the current high-technology revolution: it is emerging as a centerpiece of our post-industrial economy. But the future well-being U.S. telecommunications firms operating in the international marketplace is increasingly uncertain.

The divestiture of AT&T and other related administrative decisions to promote market competition in telecommunications were a response to domestic considerations and not in contemplation of international trade developments. However, the worldwide growth of the telecommunications sector along with increased competition in our domestic market is forcing us to come to grips with the realities of comparative market access between the major trading nations.

TELECOMMUNICATIONS TRADE

The current world market in telecommunications products is over $50 billion and is expected to reach $90 billion by 1990, according to industry and U.S. Department of Commerce estimates. Challenging U.S. manufacturers for these stakes are foreign firms, most of whom enjoy protected home markets through government-run postal telephone and telegraph agencies [PTT] or similar monopolies that control the purchase of equipment through certification procedures, licenses, standards, and other requirements which often constitute insurmountable barriers.

One direct consequence is an imbalance in the trade of telecommunications equipment. Ironically, less efficient producer countries, largely because of market restrictions at home, often enjoy the greatest trade surpluses. Despite being the world's technological leader and strongest performer under competitive conditions domestically, the United States has historically enjoyed the smallest trade surplus, as a percentage of production of communications equipment, of any major OECD country.

Even though the United States produced nearly half of the world's total production, our share of global exports is only about 13 percent. Japan exports 20 percent of the total, while West Germany at 17 percent and Sweden at 16 percent control larger shares of the world export market than the United States.

To put this in clearer perspective, exports as a percentage of total production indicate even greater disparities. Sweden exports 65 percent of its total production, The Netherlands 38 percent, Japan 16 percent, Canada 15 percent, while the United States lags with 7 percent.

Over the last 3 years, the American position in communications trade (SIC 3661, 3662) was weakened perceptibly. Though exports have grown at only 9 to 10 percent per year, a continuing surge in imports at an average annual rate of 25 percent has eliminated the U.S. surplus. Our trade balance has declined from a $1 billion surplus in 1980 to a deficit that may reach $300 million in 1984 (based on first quarter 1984 data). In first quarter 1984, imports of basic telephone equipment (SIC 3661) were almost double the first quarter 1983 level.

Much of this deficit can be attributed to Japan, Taiwan, and Hong Kong. Our largest trade imbalance is with Japan where the deficit will exceed $1 billion in 1984. Our combined trade deficit with Taiwan and Hong Kong jumped from $203 million in 1982 to $511 million in 1983.

This slide in our telecommunications trade balance certainly reflects some of the same factors affecting our overall trade problems, such as the value of the dollar.

Nonetheless, there are unique factors that are more critical to this sector. Since the *Carterfone* decision in 1968, the interconnect market in the United States has become steadily more open. At the same time the major foreign interconnect markets have opened up at a much slower pace, if at all. This situation is being compounded in 1984 with the divestiture of AT&T. What really concerns us is that the growth in imports in the past 3 years doesn't yet reflect divestiture. Beginning this year, imports of major systems with considerable technological content will now begin to enter the United States in large numbers. The newly divested Bell operating companies, for example, have begun purchasing significant amounts of foreign equipment. This could result in a multibillion dollar trade deficit in telecommunications in a few years.

I think it is also important to clearly state that U.S. firms in this industry have world-class competitive products. They do not need the establishment of trade barriers at the U.S. border in order to thrive. However, in spite of having competitive and frequently superior products they are locked out of key markets. Over time, if they are limited to the U.S. market while foreign firms can compete in both protected home markets as well as in the United States, our firms may lose their current standing.

JAPAN

The Japanese Telecommunications Industry poses the greatest national competitive challenge to American Manufacturers. As the second largest single telecommunications market behind the United States, and with 38 percent of U.S. imports. Japan has succeeded in fostering, as a matter of national priority, the rise of highly efficient and technologically sophisticated telecommunications capability. As in the case of computers, robotics, and semiconductors, this was accomplished by achieving control over their domestic market, then by moving aggressively into the international picture through trade and foreign investment.

The principal mechanism used to encourage Japan's progress in telecommunications has been the national service monopoly. Nippon Telegraph and Telephone [NTT] Corporation. Japanese equipment suppliers—known in the industry as the NTT "family of corporations"—engaged in controlled competition to provide NTT with its equipment needs. Helped by shelter from the challenge of foreign competition, Japanese companies have reached world scale levels. Now, this relationship with NTT is less a factor; while still influential in setting standards and specifications as well as being a source of technology. NTT now accounts for a minority of telecommunications purchases.

Our principal negotiating goal with Japan in this area has been to increase substantially our export of telecommunications equipment. Four years ago the NTT agreement was negotiated with the hope of expanding our telecommunications trade in Japan. There's no question that the environment for selling to NTT today is much improved over what it was prior to 1980 and you have to point to the NTT Agreement as central to that progress.

In 1983 NTT increased its contracts from U.S. suppliers to $140 million from $40 million in 1982. Because of this and explicit NTT commitments to treat United States and Japanese firms equally in all its R&D activities and make more attractive the commercial benefits of selling to NTT, the Administration decided to renew this agreement this past January. We have also begun discussions of telecommunications issues in the United States-Japan High-Technology Working Group and are continuing to press the issues of telecommunications satellites and value-added networks in several United States-Japan forums.

Some questions exist, though, about whether the NTT Agreement will ultimately provide the United States with equivalent market access to Japan's telecommunications market.

NTT represents a smaller and smaller segment of the overall telecommunications market—only 35 to 40 percent (approximately $2 billion in 1983). As such, NTT's relative importance as the "window" to the overall Japanese market is diminishing.

Out of the nearly $140 million in 1984 contracts to NTT, only about $30 million can be considered typical telecommunications equipment that involves repeat business. We have not yet had success in selling sufficiently large amounts of equipment that is part of the functional Japanese telecommunications network. Given certain extraordinary efforts by NTT to buy and U.S. efforts to sell U.S. equipment in 1983, it is an open question whether NTT will increase substantially the value of their purchases in 1984.

And finally, Japan is now in the midst of privatizing NTT and appears interested in encouraging competition. While this is a welcome development, it's unclear how U.S. competitors will fare, especially while Japanese national objectives butt heads with market forces. The best example is in communication satellites where market forces would have Japanese companies buying cheaper and better U.S. systems but Tokyo wants to dictate purchases of Japanese products that support the national commitment for the development of space-related technology.

In sum, while our goals in Japan are clear, success is not by any means assured. The question is: can we rely principally on the NTT Agreement as a means of obtaining market access at a time when Japanese sales to the U.S. of electronic-based products now exceed $14 billion while we sell only $2 billion to Japan.

EUROPE

Collectively, Western Europe represents the second largest potential telecommunications market with about 37 percent of the world's equipment market.

However, telecommunications policies for the 10-member collective should be viewed as distinct from individual national policies. Earlier this month the EC Commission approved a new telecommunications initiative for creating and stimulating a Community-wide market for telecommunications. While implementation would be a large step forward in the Community's attempts to improve the environment of its high technology industries. It remains to be seen whether such a proposal will be able to overcome the deep division in many member states and most PTT's on the formulation of such an EC-wide policy.

Most European telecommunication markets are dominated by government postal and telecommunications organizations which have monopoly control of telecommunications equipment and services. Largely due to the entrenched nationalistic attitude toward competition. U.S. companies face limited access in many countries. In France, for example, CIT-Alcatel/Thompson provide all of the central exchange equipment and 70 percent of transmission equipment for the French PTT. Overall, French companies supply over 70 percent of the French interconnect market in addition to their share of the French PTT which is nearly 100 percent. Little doubt exists that market access to the French telecommunications market is nearly nonexistent and presents an impenetrable barrier to U.S. suppliers more so than that of any other country including Japan.

While the interconnect market in West Germany is more open. We are concerned that the Bundespost is not progressing toward greater liberalization and in fact is working with the French to the detriment of other competitors. This is evidenced by their deal with the French toward establishing a Franco-German set of standards for the cellular radio system. This will effectively limit their markets only to French and West Geman National firms.

On the other hand, in the United Kingdom we continue to see some moves toward liberalization. In July 1979, the traditional U.K. monopoly structure changed permitting a separate corporation called British Telcom [BT] to concentrate on telecommunications and leaving the British Post Office to handle mail and the banking services. By passing the British Telecom Act of 1981 London also open the way for competition in telecommunication services. For example, under this law private firms can be licensed to provide services using BT's network and private firms will be permitted to sell telephone equipment directly to customers.

CANADA

The proximity of the Canadian market makes it one of the most attractive to U.S. firms. And Canada is one of the few countries that is encouraging some competition in its domestic market. Unlike other countries where state monopolies dominate markets. The Canadian telecommunications industry consists of a mix of private, governmental and joint private-governmental corporations.

Like the United States in its predivestiture period, Canadian telephone services are vertically integrated with equipment manufacturing companies linked to telephone operating companies. The Canadian telecommunications sector is more open than other major supplying countries. However, the vertical integration, plus the 17½ percent tariff of most telephone equipment, results in an effective trade barrier to U.S. firms.

NEWLY INDUSTRIALIZED COUNTRIES [NIC'S]

A good portion of our growing trade deficit in telecommunications is attributable to rapid imports from several newly industrialized countries, especially Taiwan and Hong Kong. Besides Brazil and its restrictive informatics policy, these countries do not appear yet to pose market access problems for U.S. industry. Most countries do not have manufacturing capabilities beyond low-cost, standardized equipment—for example, cheap hand-held telephone sets which make up most of our deficit with Hong Kong and Taiwan. As a result, they purchase most of their systems from foreign suppliers. Because most of these purchases take on a major projects emphasis, one of the largest issues for success in competing with Japanese and European competitors is export financing—either subsidized or at below market rates. However, we are concerned that some of the NICs might try to imitate Japanese industrial targeting, and in the process limit U.S. imports.

DANFORTH BILL

The Telecommunications Trade Act of 1984 now being reviewed by this subcommittee recognizes the two major considerations in reviewing the trade situation in telecommunications products. First, imports are increasing at a very fast rate which will not recede absent intervening forces; and second, we have a lack of market access in our principal competitors' markets—Europe and Japan. In short, compounded by the AT&T divestiture and other administrative actions, the disparity in market access between the United States and other countries is undeniable. Consequently, U.S. telecommunications firms may find themselves at a competitive disadvantage because they do not have an insulated domestic demand. More critical however, is the fact that U.S. firms that are excluded from global markets may find themselves with relatively fewer funds available for R&D, and an inability to learn by participating in overseas markets compared to their foreign competitors who have access to both home markets and the U.S. market—the world's largest.

While recognizing that this is a troublesome situation, we also realize that we have some tools at our disposal to open foreign telecommunications markets. One is to press forward with bilateral negotiations such as those that produced the NTT agreement.

The Government Procurement Code, while a vehicle for liberalizing the procurement policies of PTT monopolies, has not been applied to date. Beginning last year we again pressed for renegotiation of the Procurement Code to include telecommunications entities but this was rejected out-of-hand by most governments, especially the EC. The force of technological change will inevitably cause a degree of liberalization, but this is likely to be a lengthy process. It remains to be seen whether hungry customers can overcome the fat and powerful monopolies which are traditionally resistant to change.

Unless U.S. industry obtains equitable access to foreign markets, the full benefits of liberalization of the U.S. market will not be realized. The most pressing challenge before the administration, then, is to secure access. We are seeking industry's advice on this matter. I look forward to continuing our work with the Congress and this subcommittee in developing meaningful and workable approaches to this very serious problem. Thank you.

Senator **Danforth**. You have looked at the ITC study?

Under Secretary **Olmer**. Very briefly.

Senator **Danforth**. The same with me.

Under Secretary **Olmer**. I have one comment I could make about it, sir, that I do recall from memory. I do think it undervalues the prospects for foreign competition in sophisticated product areas. I believe that's a serious worry. The report from the ITC, seems to me, to minimize the significance of increasing imports of products at the higher end of the technological spectrum.

Senator **Danforth**. Well, I agree. I think that the ITC report points to the problem but understates the nature of the problem that you in your testimony point out. It is much more significant.

The ITC report tends to indicate that we are very good, we are very competitive, and U.S. competitiveness is going to save the day. I take it that you don't necessarily agree with that.

Under Secretary **Olmer**. If our companies are permitted the opportunity to remain competitive, I would. But I don't think they will be so enabled because of the intervention of foreign governments.

Senator **Danforth**. And, therefore, what does that say for U.S. policy?

Under Secretary **Olmer**. It says we need some new policies. To me it says we need some new policies. I just returned from Europe, as you may know, and attended a conference on high technology in information industries, where a number of European company representatives and government officials were in attendance and where I had some extensive conversations. More than listened to the speeches; I read them afterward. There is a common thread that runs through every single one of them. It impressed me to no end to come back and reflect on it; that common thread is an overwhelming apprehension for what America can do to Europe's desire to gain competitiveness in this emerging area that is so critically important not just to one industry or one sector, but to entire countries. And because of that, they are not likely to be amenable, short of a large stick, to opening markets just in the interest of pursuing the ideal of free trade.

Senator **Danforth**. Is the administration endorsing my bill?

Under Secretary **Olmer**. We are in the process of working it over, Mr. Chairman. [Laughter.]

Senator **Danforth**. Thank you.

Well, this isn't a hearing on the bill. We are going to have one. Nothing in that bill is in concrete as far as I am concerned. But I do think it's necessary to have leverage to open up other markets if we are going to be open ourselves. It's beyond my understanding to find that we have any leverage right now.

Under Secretary **Olmer**. Mr. Chairman, some European governments and companies in those countries have excellent small companies, and some large companies which could be competitive in the European market if they were allowed to sell to other European PTT's. But they are not. They see the American market as their opportunity to develop economies of scale since they can't gain market access in Europe. So what I see is sort of a conversion. The inability to alter in any substantial way in the near term European policy, while our policy has been set—we have a deregulated industry. We are encouraging competition. We believe that that creates more technology and jobs and innovation and so on. And it does. But over time, given the subsidization of those foreign governments, especially in Europe, and the fact that many of them today are excellent companies—they really are very good—many are interested in buying American technology. They are interested in joint ventures in order to obtain the latest state of the art technology that they can't afford to develop themselves because they don't have a large enough market. And then it's no surprise after which they very much want to sell into our market. And as it presently stands, they are able to do just that.

Senator **Danforth**. Do you think that whatever we do by way of changing our strategy, improving on our tools to deal with the situation should be done pretty quickly?

Under Secretary **Olmer**. I don't think we have a lot of time. The company plans of several smaller scale European firms I have looked over, leads me to believe they know exactly where they want to go in America and how to get there and realize that the policy framework exists. They are uncertain about their own government, and they are uncertain about the other governments in Europe.

Senator **Danforth**. As you have noticed, Congress is not exactly proceeding with the olympic-like speed in trade legislation this year or, indeed, in many other areas. But if this is something which is important, and if it is something which must be addressed legislatively, and if time is of the essence, my hope would be that we could be ready first thing for the next Congress in introducing a bill which would be supported by the administration which would address this situation. It seems to me that if we don't provide an adequate claimant for the telecommunications industry, we are really creating great damage in the one area where we should be very competitive.

Under Secretary **Olmer**. Mr. Chairman, in 1979, the European Commission made a proposal to set aside 10 percent of the 10 member state PTT annual procurement into sort of a collective pool which other member states would be allowed to bid on. That 1979 initiative is about to expire. Well, it did expire in 1983, and there wasn't one single example of it ever having been used. I merely cite that as one revealing instance of the inability of the Europeans to come together among themselves. And I'm afraid that they are seeing through the process of deregulation in America and through the wonders that have occurred in the last year and a half in our economic recovery, and the attention that the job creating aspects of America has received in Europe, I'm afraid that they believe the time is not only right, but it's fast running out.

Senator **Danforth**. Thank you, Mr. Secretary.

Senator Grassley.

Senator **Grassley**. I guess I'm pessimistic about whether or not there will be a long-term strategy, if there is a strategy, to make the necessary changes or to bring the pressure to bear that will. I hope that there is, but quite frankly we have been so namby-pamby in the way that we have approached competition and the necessary negotiations that go on, never willing to back up what we say with a strong enough stand—and I think it's because we don't have enough of an overall policy. It seems like we are always trying to put out trade fires. Congress is always running there with the bucket full of water. If we use a hose, the hose isn't long enough, or there isn't enough water pressure. We never quite get the job done. And I just wonder if we thought enough about an overall trade policy. I know that in 1981 and 1982 I made a suggestion for an economic trade summit in which we would have the best people in our country from academia, labor, business, government, and agriculture get together to establish an overall trade policy similar to what had been done under the Williams Commission. And that wasn't really taken very seriously or given very serious consideration.

But if we don't have some sort of an overall strategy—not just in telecommunications but in everything—we are going to have to resolve these approaches through hearings like this, through legislation like Senator Danforth has brought up a little bit too late. We always seem to be catching up.

And for the professionals within Government that hang around from administration to administration that want America to take a second role, they are somehow dragging their feet, and it seems like they always win out. And that is why we always look like a paper tiger in international trade. So it seems to me like not only in telecommunications but in so many things in foreign trade we are going to have to get our act together and have an overall strategy or we are always going to be having a brush fire to fight. If you want to comment, I would be happy to have you react, even if you disagree with me. But you don't have to. It's just an observation that I want to make for the record.

Under Secretary OLMER. Well, thank you, Senator Grassley, for the opportunity to solicit your support and that of the chairman for the administration's effort to reorganize our trade policy apparatus.

[Laughter.]

Under Secretary OLMER. That will also be a matter of first priority when the Congress returns in January.

Senator GRASSLEY. Well, if we have got to get a new bureaucracy before we can have a new trade policy, instead of just being behind in telecommunications, we will be behind on everything. I think we have got to have a policy that is comprehensive.

Under Secretary OLMER. We have done, I think, a fair to good job in the instance of Japan in the area of telecommunications. It remains to be seen whether I will be proven right. Only circumstances that are reflected in sales by American companies and investment companies will prove that. But we have established a framework. And the way we did it was through an intensive effort that involved the entire administration. I have been sort of negative on the European Community and maybe I have allowed my recent experience to overwhelm what might otherwise have been a more optimistic outlook—but in the instance of Japan, the prospects were not good. And yet I'm absolutely convinced that many companies in Japan, many companies outside of the telecommunications area very much want foreign products because they realize that there is greater product innovation abroad than there is domestically, and they will begin to put pressure on their own governments.

My written testimony has a sentence in there that suggested that too will be a factor in Europe, but it remains to be seen as to whether it will happen fast enough. I don't for 1 minute think that market forces alone are going to solve this problem. They won't. If they were allowed to, they would. The fact is that governments abroad are not going to permit them to work.

We were successful in the instance of Japan because we did make a full court press. And I think we need to do the same thing elsewhere. We may have a similar opportunity.

Senator GRASSLEY. One clarification. My observation was based upon not just this administration but over a much longer period of time. In fact, I guess you can look at some areas where there is some benefit from strong approaches that have been taken. But I still think we lack an overall strategy—maybe there is one there, but I think the point of the overall strategy, if there is one, ought to be made more clear because I don't think it's understood at least in the agricultural groups in my State that are so concerned about foreign trade.

Senator DANFORTH. Thank you, Senator Grassley.

Secretary Olmer, thank you very much. And I want you to know that I very much hope that you will be back at the time of the convening of the next Congress, still in the Commerce Department, pressing for those good ideas which the administration has on international trade, and maybe even those ideas which are not quite so good.

Under Secretary **Olmer**. Thank you, sir. Like-minded people will be back.

Senator **Danforth**. Next we have a panel consisting of Wayne Weeks, president of AT&T Technologies' Network Systems Group, New York; Mr. John J. McDonnell, Jr., group vice president, Telecommunications Group, Electronic Industries Association, Washington, DC.

STATEMENT OF E. WAYNE WEEKS, PRESIDENT, AT&T TECHNOLOGIES' NETWORK SYSTEMS GROUP, NEW YORK, NY

Senator **Danforth**. Mr. Weeks, thank you for being here.

Mr. **Weeks**. My name is Wayne Weeks and I'm president of AT&T Technologies' Network Systems Group. We design, manufacture, and install switching, transmission and cable, and wire products. Now while we are still, as most other people are, studying the commission's report in detail and expect to file comments at a later date for the record, this morning I would like to briefly present my perspective and concern on the basic issue being brought into the focus through the efforts of this committee.

The issue, as I see it, is whether the court and commission ordered restructuring of the telecommunications industry has created significant trade problems for the United States. And in my opinion, it has.

Conditions favorable to entry by foreign producers first occurred for customer premise equipment, as we have heard earlier today, with the result that we are all familiar with. And furthermore, we are familiar with the strategy of first entering the United States with lower cost products, and then building on this base to sell more complex and sophisticated equipment. Conditions for major competitive inroads by foreign suppliers now exist for network products also. And logic tells us that these conditions will be exploited in the same way that they were for customer premise equipment.

For network products such as switching and transmission systems, the full impact of recent changes in the marketplace have not really had a chance to be felt. But even before divestiture, we were seeing significant activity in some product areas. Among these were digital switches, light wave systems and digital radio systems. And our figures project sales of network equipment by foreign based companies to be a billion and a half dollars in 1984. That's a 30 percent increase over 1983. And then a potential 300 percent growth over the next 5 years.

Thus, our projections are that the experience with customer premise equipment will be repeated in other telecommunications product areas. What we have seen so far is just the beginning.

Now our foreign based competitors are free to export their products to the United States, to acquire U.S. firms, or set up shop and manufacture here themselves, all without substantial impediments. And in selling here, they are not hobbled, as AT&T is, by the structural separation requirements of the FCC's "Second Computer Inquiry."

But what is particularly frustrating to us is our lack of a corresponding ability to fairly compete in their home countries because of tariff and significant nontariff barriers to trade and investment. For example, we have found that the price of entry in many countries is the sharing of our proprietary product and manufacturing technology. Our experience is that these barriers are real and significantly affect our ability to compete abroad.

This situation I have described has clear and disturbing implications for our Nation's technological leadership and balance of trade. We favor free trade, but notice that it does not prevail. For that reason, we strongly support initiatives such as the Commission's report, but we are concerned that it does not reflect all of the effects on trade in network products, not all of the effects that we perceive.

However, our hope is that the report will focus attention on the need for action to achieve an international free trade environment.

That's the end of my statement, Senator, and thank you very much.

Senator DANFORTH. Thank you, Mr. Weeks.

[The prepared statement of Mr. Weeks follows:]

STATEMENT OF E. WAYNE WEEKS, JR., ON BEHALF OF AT&T TECHNOLOGIES

My name is Wayne Weeks. I am president of AT&T Technologies' Network Systems Group. We design, manufacture, and install switching, transmission, and cable and wire products.

We are still studying the Commission's Report and expect to file comments for the record later on. Today, I would like to briefly present my perspective and concerns on the basic issue being brought into focus through the efforts of this Committee.

That issue, as I see it, is whether the court- and Commission-ordered restructuring of the telecommunications industry has created significant trade problems for the United States. In my opinion it has.

Conditions favorable to entry by foreign producers first occurred for customer premises equipment—with results with which we are all familiar.

Conditions for major competitive in-roads by foreign suppliers now exist for network products also. Logic tells us that these conditions will be exploited in the same way.

Furthermore, we are familiar with the strategy of first entering the United States with lower cost products, and then building on this base to sell more complex and sophisticated equipment.

For network products, such as switching and transmission systems, the full impact of recent changes in the marketplace have not really had a chance to be felt. But even before AT&T divestiture, we were seeing significant activity in some product areas—such as digital switches, lightwave systems and digital radio systems. And our figures project sales of network equipment by foreign-based companies to be a billion and a half dollars in 1984—a 30-percent increase over 1983—with potential 300-percent growth over the next five years. Thus, our projections are that the experience with customer premises equipment will be repeated in other telecommunications product areas. What we have seen is only the beginning.

Our foreign-based competitors are free to export their products to the United States, acquire U.S. firms, or set up shop and manufacture here themselves—all without substantial impediment. And in selling here they are not hobbled, as AT&T is, by the structural separation requirements of the FCC's Second Computer Inquiry.

But what is particularly frustrating is our lack of a corresponding ability to fairly compete in their home countries because of tariff and nontariff barriers to trade and investment. For example, the price of entry in many countries is a sharing of our proprietary product and manufacturing technology. Our experience is that these barriers are real, and significantly affect our ability to compete abroad.

This situation I have described has clear and disturbing implications for our nation's technological leadership and balance of trade.

We favor free trade, but notice that it does not prevail. For that reason we strongly support initiatives such as the Commission's Report. But we are concerned that it does not reflect all of the effects on trade in network products that we see. However, our hope is that the Report will focus attention on the need for action to achieve an international free trade environment.

STATEMENT OF JOHN J. McDONNELL, JR., GROUP VICE PRESIDENT, TELECOMMUNICATIONS GROUP, ELECTRONIC INDUSTRIES ASSOCIATION, WASHINGTON, DC

Senator DANFORTH. Mr. McDonnell.

Mr. McDONNELL. Thank you, Senator.

As you are aware, the Telecommunications Group of the Electronic Industries Association has endorsed the Telecommunications Trade Act of 1984. And we look forward to addressing some of the issues raised by that legislation at a subsequent hearing.

Today we would like to discuss the trade impact of the AT&T divestiture and the future of international trade in telecommunications equipment. Just like AT&T, the Telecommunications Group advocates and promotes the opening of world markets. Our industry is a world leader technologically and to the extent that world trade barriers are reduced, our member companies can naturally benefit from increased sales opportunities. Therefore, we have consistently opposed protectionism and protectionist measures in the United States and abroad.

We have been able to review and comment on the trade hearings that were conducted by the International Trade Commission, and our statement for the record goes into some depth in analyzing some of their comments.

But in analyzing the impact of divestiture on the U.S. market, we feel as you have indicated, that they grossly understated the situation as it exists today. For one thing, when we look at the statistics which they so accurately have gathered and pointed out in their report, we see a completely different picture than the one which they portray in the report.

For example, when we look at the same period 1978 to 1983, which they analyzed, we see a growth of over 600 percent in imports, a number which doesn't appear to show up any place in the report, but which can be readily calculated from the tables. By contrast, our exports grew by only 57 percent. Now, obviously, this is not due to divestiture. The opening of our market started some years ago. Divestiture is just the latest in a long series of decisions which has resulted in the opening of the market.

We have also heard comments today that the balance of trade in 1983 reversed for the first time in this high technology area. The other area that they don't seem to have addressed in the report is what the Bell operating companies are doing in terms of determining who their equipment suppliers will be in this post-divestiture era. There is a statement in the report that indicates they don't see any major impact and that the Bell operating companies will continue to purchase from AT&T. And yet on April 9, there was a chart published in Communications Week which indicates that of all seven operating companies six have selected foreign firms as one of their suppliers for PBX equipment. And, in fact, one has selected all foreign firms. Each of them selected at least three suppliers.

Now if that is not going to have a major impact on the post-divestiture scenario of the telecommunications industry, I'm not sure what will.

You have already heard comments about what the impacts would be on post-divestiture overseas. By opening our markets and creating economies of scale for our foreign competition, we can expect that they will be more competitive in the markets in which we both compete, namely the less developed countries.

The second area that we would like to address today is the area of the foreign market for telecommunications. You have heard testimony that the foreign market is closed. The ITC report gives us some figures that tell us just how closed it is. They analyzed eight foreign countries where the market is $21.5 billion. If you read through all their figures, they don't state it, but you will find that we got half a billion dollars in those eight countries. And if you analyze it even further, you will find that the half billion went primarily to the private sector. Virtually nothing to the public sector. This tie that I'm wearing was given to me in November by the German Bundespost. I suggest it may be the only thing an American communications company got from the German Bundespost in 1983. I can assure you it was the only thing my company got.

I have just joined EIA after 3½ years as vice president of international operations for a U.S. data communications company, and I still bear all the scars of the international trade battles.

The biggest problem that we have overseas is that the PTT's maintain a monopolistic market and only in certain countries do they even open the private sector. And the trend is getting worse. In the European common market where they have closed telecommunications one to another to favor their own domestic industries there is a move afoot to open it, but only to the other European countries. The French minister of the PTT stated in April and was quoted in Le Monde that this should be a major priority of the European Community—to open the market so that they can develop economies of scale which will enable them to compete with American and Japanese companies in the countries in which we mutually compete.

That brings us to the final segment of international trade, which is the less developed countries that don't have their own telecommunications industry and purchase from Europe, Japan, Canada, and the United States.

Here I'm afraid the U.S. Government must bear some responsibility as part of the sales prevention team. The handicaps that we endure in competing with foreign countries are numerous, but just to isolate a few that we found most burdensome is export financing at below market interest rates to finance overseas projects, a very common practice that foreign governments practice on behalf of their domestic telecommunications industry; subsidized and joint research and development activities. That is quite legal overseas, but here prohibited by antitrust laws.

The linking of government aid measures, such as providing aid to developing countries which purchase equipment from the nation extending the aid. A tying arrangement, which again, in this country is illegal per the antitrust laws.

So we go into these less developed countries literally with our hands tied behind our backs. In fact, it's remarkable that we have achieved the kind of success we have. And it really is attributed to the one thing that we will agree with in the ITC report, and that is that the U.S. telecommunications industry continues to maintain its technological superiority, and that's the only basis on which we can compete.

Thank you.

Senator **Danforth**. Thank you, sir.

[The prepared statement of Mr. McDonnell follows:]

STATEMENT OF JOHN J. McDONNELL

Group Vice President
Telecommunications Group
on behalf of the
TELECOMMUNICATIONS GROUP OF THE
ELECTRONIC INDUSTRIES ASSOCIATION

Mr. Chairman, I am John J. McDonnell, Group Vice President of the Telecommunications Group of the Electronic Industries Association. I am testifying today on behalf of the Telecommunications Group, which represents 68 U.S. producers of telecommunications equipment. I appreciate the opportunity to appear before you today.

As you are aware, the Telecommunications Group has endorsed S.2618, the Telecommunications Trade Act of 1984, and I look forward to addressing some of the issues raised by that legislation in a subsequent hearing. I am here today to discuss the trade impact of the AT&T divestiture and the future of international trade in telecommunications equipment. A number of recent studies have addressed these issues, including, most recently, a study prepared by the U.S. International Trade Commission at the request of the Committee on Finance. The various studies have arrived at a range of rather divergent conclusions, which underscores the difficulty of predicting the impact of a market restructuring as sweeping as that which is now underway as a result of the breakup of the Bell system. At the risk of adding still further to the cacaphony of opinion, I would like to offer my own views on the subject.

The Telecommunications Group supports the opening of markets in the U.S. and abroad. Our industry is a world leader technologically, and to the extent world trade barriers are reduced, our member companies naturally benefit from increased sales opportunities. Accordingly, we have consistently opposed protectionism and protectionist measures in the United States and abroad. In a world characterized by free trade, we would welcome the breakup of the Bell system without reservation as a market opening measure creating new opportunities and a more competitive environment for our companies. However, unfortunately, we are at present, practically alone among the developed countries in having created an open market for telecommunications equipment -- the domestic markets of our major international competitors are, with a few exceptions, largely closed to foreign sales.

It is against this background that the AT&T divestiture has occurred. We have, in effect, largely completed the process of opening our own market unilaterally, while our major rivals' markets remain wholly or largely closed. In my view, the existing imbalance in reciprocal opportunities has been exacerbated by the divestiture, and that fact holds significant implications for our long run trade performance in this sector.

I. The International Trade Consequences of Divestiture

The breakup of the AT&T system is resulting in a substantial further opening up of the U.S. telecounications equipment market, which was already one of the most open in the world. In effect, we have opened our own market unilaterally while the markets of our principal international competitors remain largely closed to our products, particularly with respect to core technology items such as switching and transmission equipment. We believe that this unilateral opening has had and will continue to have an impact on trade in telecommunications equipment -- specifically, we think that it will result in a sharp increase in import volume and import share of the U.S. market, and that if anything, it will have a negative effect on U.S. firms' export performance.

A. Impact of the Divestiture on the U.S. Market

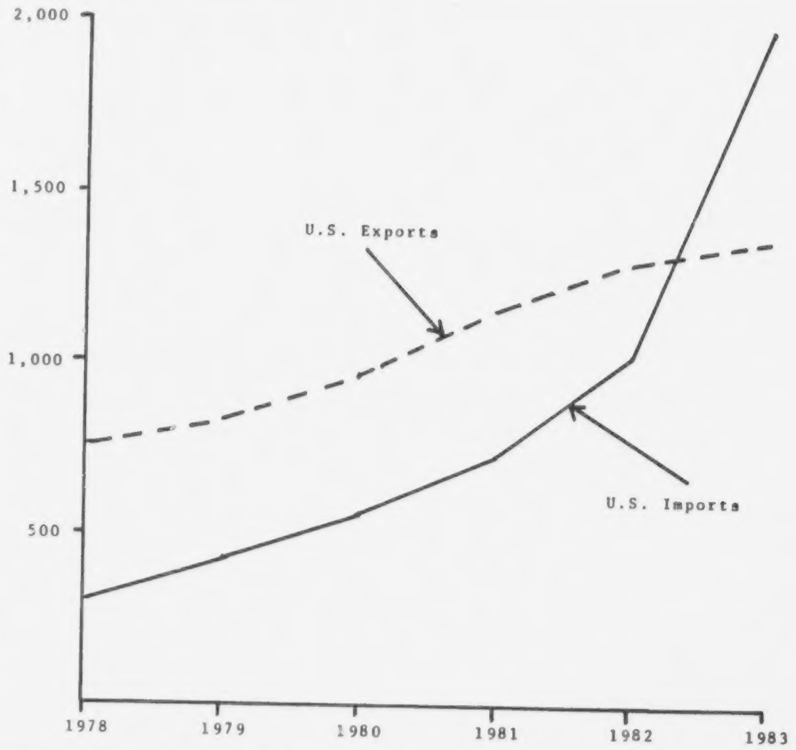
We think that the biggest single trade-related effect of the divestiture will be on the volume of telecommunications equipment imports into our own market. Imports reached an all-time high of approximately $2 billion last year, nearly double the 1982 total, and over five times the total for 1978. We believe that the divestiture will accelerate this trend.

The breakup of the AT&T system cannot be looked at in isolation -- it is in fact only the most recent in a series of judicial and regulatory actions which have progressively opened up the U.S. telecommunications equipment market to foreign suppliers. A series of FCC actions in the 1960s and 1970s allowed non-Bell equipment to be connected to the public switched telephone network (PSTN) -- and as a result, imports of products such as telephones, modems, telephone answering machines, and PBXs have incrased substantially. At the same time, U.S. equipment producers increased their export volume, but not at nearly the same rate at which the volume of imports was growing. In significant part, this reflected the fact that most foreign markets which had their own indigenous equipment suppliers were closed to our products -- our increase in exports for the most part reflected sales in developing countries and the Middle East. As a result of these trends -- an import growth rate that far exceeded our export growth rate -- our balance of trade in telecommunications equipment turned negative in 1983 (Table 1).

The statistics gathered by the U.S.I.T.C. for its report illustrate how this phenomenon has occurred. Table 2 depicts the U.S. import and export trends in the major telecommunications equipment product categories according to the U.S.I.T.C.'s statistics for the years 1978-83, the historic period which the U.S.I.T.C. examined in its study. As can be seen, imports of customer premises equipment -- a product market which was significantly opened by FCC regulatory actions -- grew by 640 percent between 1978 and 1983, totaling more than $1.5 billion last year. By contrast, our exports grew by only 57 percent during the same period -- our trade deficit in this product category exceeded $1 billion last year, and the balance of trade ran against us by more than 3 to 1.

Table 1

THE U.S. BALANCE OF TRADE IN TELECOMMUNICATIONS EQUIPMENT, 1978-83



Source: U.S. International Trade Commission Report, Table 4.

Table 2

TRENDS IN U.S. TRADE IN TELECOMMUNICATIONS EQUIPMENT, 1978-83

Telecommunications Equipment (Total)

	Exports		Imports	
Year	Value ($ Million)	Increase (Decrease) Over 1978	Value ($ Million)	Increase (Decrease) Over 1978
1978	$ 748.5	—	$ 300.1	—
1979	858.4	14%	413.0	37%
1980	969.9	30%	559.1	86%
1981	1,138.3	52%	712.8	137%
1982	1,319.2	76%	1,018.1	129%
1983	1,341.7	79%	1,990.3	536%

Transmission Equipment

	Exports		Imports	
Year	Value ($ Million)	Increase (Decrease) Over 1978	Value ($ Million)	Increase (Decrease) Over 1978
1978	$ 72.6	—	$ 66.1	—
1979	88.2	21%	73.1	10%
1980	98.8	36%	92.1	36%
1981	123.6	70%	106.4	56%
1982	139.6	92%	185.3	164%
1983	148.1	104%	331.7	366%

Cable, Wire and Lightguide

	Exports		Imports	
Year	Value ($ Million)	Increase (Decrease) Over 1978	Value ($ Million)	Increase (Decrease) Over 1978
1978	$ 161.1	—	$ 8.2	—
1979	156.0	(3%)	16.0	95%
1980	108.6	33%	30.3	270%
1981	137.0	(15%)	38.5	370%
1982	134.0	(16%)	41.0	400%
1983	164.7	2%	48.6	593%

Customer Premises Equipment

	Exports		Imports	
Year	Value ($ Million)	Increase (Decrease) Over 1978	Value ($ Million)	Increase (Decrease) Over 1978
1978	$ 314.6	—	$ 213.7	—
1979	381.8	21%	301.4	41%
1980	454.7	45%	408.6	91%
1981	492.1	56%	552.8	158%
1982	520.8	66%	775.0	263%
1983	495.0	57%	1,582.4	640%

Switching Equipment

	Exports		Imports	
Year	Value ($ Million)	Increase (Decrease) Over 1978	Value ($ Million)	Increase (Decrease) Over 1978
1978	$ 199.7	—	$ 12.0	—
1979	232.4	16%	22.4	87%
1980	307.9	54%	28.4	137%
1981	385.5	93%	15.1	26%
1982	523.9	162%	16.8	40%
1983	533.9	167%	27.6	130%

Source: U.S.I.T.C. Publication 1542 (June 1984) Tables 4-8.

In the other product categories, cable, wire and lightguide, and transmission and switching equipment, the total volume of imports has until now been smaller -- reflecting, in part, the relationship between Western Electric and the Bell operating companies -- but here too, prior to divestiture, the trends were already largely unfavorable for the U.S. industry. The independent telecommunication and interconnect companies, and to some extent the Bell companies themselves, constituted markets for foreign suppliers of these products. Imports of cable, wire and lightguide products increased by nearly 600 percent between 1978 and 1983, while our exports showed virtually no growth. In transmission equipment, imports grew more than 3 1/2 times faster than our exports. Only in switching equipment did our export growth rate marginally exceed that of our imports.

When these figures are aggregated, it is evident that even before the divestiture, the trade trends in this sector were already highly unfavorable to the U.S. industry. Imports have grown at a rate more than six times greater than our exports between 1978 and 1983 -- and while most of our export growth came prior to 1981, the greatest increase in imports has come since 1981.1/ In effect, our exports are stagnating, while our import volume is growing explosively.

All of this happened before divestiture, but it suggests what some of the effects of the AT&T breakup may well be. The

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1/ Moreover, if one begins with a base year of 1976, the figures are even more dramatic. U.S. export in 1983 were 205% greater than 1976 but import were 1,449% greater - a seventeen fold increase.

market for customer premises equipment, where the most pronounced import growth has occurred to date, is the product area where pre-divestiture regulatory measures have had the greatest market-opening impact. We believe that the divestiture may have a similar effect in many other product areas, and that the experience of this sector may, in effect, be repeated on a larger scale. To the extent that we see room for some hope in these figures, it stems from the fact that U.S. firms' strongest performance has been in the highest-technology product areas -- we retain, at present, an overall technological edge in this industry.

We note that the U.S.I.T.C. has concluded that "there is no particular indication that the divestiture is expected to produce an increase in telecommunications equipment imports" (p. 87). In part this conclusion is based on the Commission's view (p. 86) that "the bulk of the Bell operating companies' market should remain with Western Electric." We recognize that predicting the future is at best a hazardous occupation, but we disagree with the Commission's assessment for several reasons. In fact, we would point to the 1983 import surge which resulted in the first trade deficit in the history of the telecommunication sector in support of our contention. While divestiture had not yet taken place, its existence was known and already beginning to affect buying decisions.

Recent reports indicate that the former Bell companies have turned to foreign sources on a widespread scale (we have attached a number of these reports to this testimony). A large number of

Bell companies have already concluded contracts with foreign suppliers to use and in some cases distribute their products, including key switching systems and PBXs. In fact, many of the operating companies -- apparently anxious to sever the AT&T tie -- are reportedly courting suppliers other than Western Electric. One industry observer commented recently in the Washington Post that "there is a little bit of animosity between AT&T technologies and the Bell companies, a lot of which exists because the Bell companies view AT&T as their competitor."

One example of this phenomenon is illustrated in Table 3, which depicts PBX sourcing by former Bell operating companies which are now marketing customer premises equipment. Each company is marketing three lines of PBXs, and in most cases at least one of these lines is a foreign-made PBX. In the case of one former operating company, Ameritech, all three PBX lines are foreign-made, and in two other instances, two of the three lines are foreign-made.

We believe that it is logical to assume that the former Bell companies will seek alternative sources of equipment since it is ultimately to their advantage to be able to choose among several suppliers. This process will inevitably lead to an increase in foreign sourcing because in many product areas, foreign-made equipment is highly competitive with U.S.-made equipment, and foreign firms are likely to offer favorable terms to the operating companies as a means of securing and expanding a foothold in the U.S. market -- which is the largest telecommunications equipment market in the world. Numerous recent

TABLE 3

PBX SUPPLIERS TO THE BELL OPERATING COMPANIES

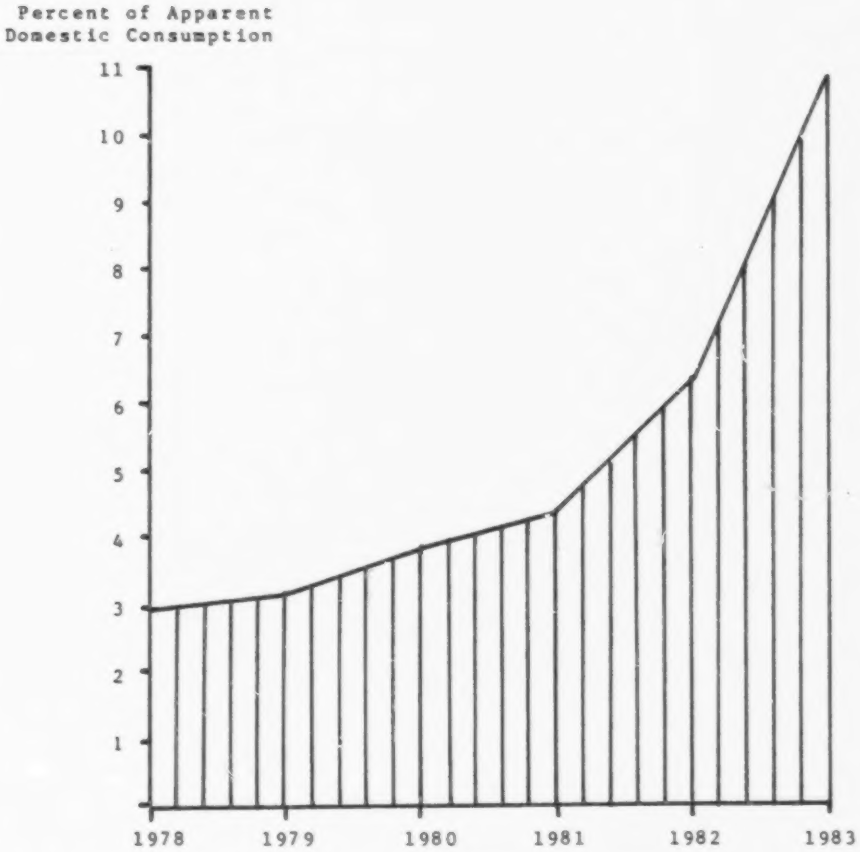
Former Regional Bell Operating Company	Division Selling PBXs	PBX Manufacturer	PBX
Ameritech	Ameritech Communications	TIE/Comm.(F)	Data Star
		Ericsson (F)	Prodigy
		NEE (F)	NEAX 2400
Bell Atlantic	Bell Atlanticom Systems	TIE/Comm.(F)	Data Star
		NEC (F)	NEAX 2400
		Intecom	IBX
Bell South	Bell South Services	American Tel.	Focus
		ITT	3100L
		Northern Tel.	SL-1, 100
		Intecom	IBX
NYNEX	Business Information Systems	TIE/Comm.(F)	Data Star
		GTE	Omni
		Intecom	IBX
Pacific Telesis Group	Pac Tel. Communications Systems	TIE/Comm.	Data Star
		American Tel.(F)	Focus
		Northern Tel.	SL-1
Southwestern Bell Corporation	Southwestern Bell Telecommunications	American Tel.(F)	Focus
		Northern Tel.	SL-1, 100
		Intecom	IBX
US West	Firstel Information Systems	TIE/Comm.(F)	Data Star
		NEC (F)	NEAX 2400
		Ztel	PNX

(F) - Foreign-made PBX

Source: Communications Week, April 9, 1984.

Table 4

IMPORT PENETRATION OF THE U.S. MARKET FOR TELECOMMUNICATIONS EQUIPMENT, 1978-83



Source: U.S. International Trade Commission Report, Table 4.

reports that foreign suppliers are gearing up for a major push into the U.S. market tend to confirm that this is actually occurring (we have attached several such articles to this testimony).

Finally, while no one can predict the future with perfect accuracy and clarity, we do have the benefit of some historical experience with respect to market opening in this sector. As noted, the market for customer premises equipment, which was substantially opened in the past two decades, has seen a major influx in import volume. This has occurred not only at the lower end of the technological spectrum -- disposable telephones and similar products -- but also with respect to the higher technology product lines, such as PBXs and modems. We think that it is not unreasonable to assume that a similar result may occur over the next several years as a result of divestiture in product areas such as central office equipment and transmission equipment -- in fact, imports of all of these product types showed a sharp increase in 1983, when the effects of the imminent divestiture were beginning to be felt.

B. The Effect of Divestiture in International Markets

We believe that the principal impact of the AT&T divestiture on competition in international markets will be to enhance the cost-competitiveness of the foreign competitors of U.S. telecommunications equipment producers in third country markets. To a large degree, cost reduction is a function of sales volume -- as volume increases, a producer reduces its unit costs through economies of scale and learning economies (the so-called "learning curve"). Foreign firms gaining access to the U.S. market will be able to add U.S. sales volume to the volume they already enjoy as a result of their protected home markets -- enabling them to reduce the cost of all of their products and to price more aggressively against U.S. firms in third-country markets such as the developing countries and the Middle East. U.S. firms could offset this advantage by corresponding increases in their own export sales volume. However, as long as the home markets of our competitors remain largely closed, our ability to do this will remain limited. We address this issue more completely in our assessment of the future of international trade in telecommunications equipment.

II. The Future of International Trade in Telecommunications

There are two international markets for telecommunications, the more developed countries which have domestic telecommunications supplier industries and the less developed countries who do not. Each of these markets has unique characteristics which affect our international trade.

A. Trade With Developed Countries

As accurately pointed out in the U.S.I.T.C. report,[2/] the U.S. represents the largest market for telecommunications equipment. The other major markets which have a domestic

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2/ U.S.I.T.C Publication 1542 (June 1984) telecommunications industry of their own are the European Community, Japan and Canada. The U.S.I.T.C. report accurately reports on the status of the telecommunications market in eight major foreign countries.[3] It documents very well the fact that all foreign telephone administrations have restrictive purchasing policies in place which favor domestic suppliers. Therefore, most of the trade which presently exists involves the sale of equipment to the private sector. At the present time, even the European Common Market countries have kept government procurement of telecommunications equipment out of the arena of competition. Unfortunately, the U.S.I.T.C. report does not separate the foreign market figures into Private Sector and Government Sector. As a result, it gives us no clear picture as to which part of the $21.5 billion dollar market[4] which it analyzes is open to competition. However, by analyzing Tables H-6 through H-15 in the report, we find that of the $1.3 billion in U.S. equipment exported in 1983, less than $.5 billion dollars went to the eight developed countries who represented a $21.5 billion dollar market. If we can assume, as the report states[5] and the EIA Telecommunications Group supports, that "U.S. firms remain foremost in telecommunications technology" then we can only conclude that the overwhelming portion of the communications market in developed countries is closed.

3/ Ibid., p. 44.

4/ Ibid., p. 38.

5/ Ibid., pg. xii.

Also, the report fails to point out the ongoing effort within the European Community to establish a European Telecommunications System with open procurement limited to the 10 EC countries. One of the stated objectives of this effort is to create a market large enough to encourage European manufacturers to make the investments needed "to allow them to compete with U.S. and Japanese firms." [6] Clearly, the European Community has no intention of opening its markets in the same manner in which we have opened ours.

As stated in the U.S.I.T.C. report,[7] Japan has had the most closed market for telecommunications. While we acknowledge that Japan has undertaken some programs to open up their market, these programs have had limited success to date. In 1983 the U.S. imported $470 million -- an increase of 60 percent -- while exports amounted to $7 million. For 1984, projections are that imports will rise to $660 million while exports will increase to $25 million.[8]

The growing trade imbalance necessitates the consideration of stronger measures. This is why the Telecommunications Group of EIA welcomed the introduction of the Telecommunications Trade Act of 1984.

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[6] French PTT Minister Louis Mexandeau, Le Monde April 3.

[7] Ibid., p. 44.

[8] Department of Commerce figures.

B. Trade With Less Developed Countries

In 1983, the international market for telecommunications equipment outside of the eight foreign markets analyzed by the U.S.I.T.C. report amounted to $14.4 billion dollars or 26 percent of the world market. Of this, the U.S. was only able to capture $.8 billion or 1.5 percent of this market.[9] Unfortunately, the report does not address this issue in any depth.

Given our often stated technological superiority, why have we been so ineffective in a market which, in theory, offers equal opportunity to both ourselves and our international competitors? We can cite the fact that the governments of most countries who have a telecommunications industry -- as a matter of public policy -- support the export activities of their domestic suppliers. These supports take several forms:

- Export financing at below market interest rates to finance overseas projects;
- Subsidized and joint research and development activities;
- Linking of government aid measures (such as development aid) to developing country purchases of equipment from the nation extending the aid.

We would be remiss if we did not also cite the U.S. government as a member of the "sales prevention team." While other countries encourage exports, we apply export controls. While other countries encourage and finance joint R&D efforts, we enforce antitrust laws which inhibit such activities. While other countries attach strings to foreign aid grants, we consider it beneath ourselves to do so.

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[9] U.S.I.T.C. Report, op. cit., pg. 17.

The very entrepreneurial spirit which has caused our telecommunications industry to grow from 380 firms in 1978 to 550 in 1983[10/] works to our disadvantage in international markets for two reasons. Many of the smaller companies feel that the financial risk of entering the international marketplace is too great given the existing obstacles. Secondly, only our largest suppliers are capable of bidding some of the large "turn-key" projects.

It is possible that the Export Trading Act of 1982 could be utilized to overcome these disadvantages and the Telecommunications Group is actively exploring this possibility. It should be noted, however, that the degree of success enjoyed by companies formed under the act has been disappointing at best and catastrophic at worst.

Therefore, we strongly recommend that efforts be made to counter the incentives being provided to our competitors by introducing similar measures. For example, the Export-Import Bank should become more competitive in extending export financing to U.S. firms and we should act on some of the pending legislation permitting joint R&D efforts. While we do not expect and are not asking for parity with our foreign competitors in these areas, we need to blunt the non-technical advantages offered to our foreign competitors so that our technological superiority can successfully expand our export market.

10/ Ibid., Pg. 17.

The Washington Post

Sunday, May 20, 1984

Telephone Equipment Fight Is On

AT&T Breakup Opens Up Vast, Growing Market

By Merrill Brown
Washington Post Staff Writer

NEW YORK—The breakup of American Telephone & Telegraph Co. not only created seven giant regional telephone companies, but it also has opened a vast and growing market for telephone equipment, more dramatically than industry executives could have imagined.

With the end of their old product supply relationship with AT&T's Western Electric subsidiary, the new Bell holding companies are buying equipment from companies across the United States, from Canadian-based giant Northern Telecom Ltd. and increasingly from off-shore companies such as Japan's NEC America, a subsidiary of Nippon Electric.

It is too early to tell whether American or foreign equipment firms will benefit more from the breakup, but the nature of the new competition is clear, company officials say. “The industry is becoming a world marketplace, and you will see products coming and going depending on their price and technology,” said William L. Weiss, chairman of Ameritech, the Chicago-based telephone holding company spun off from AT&T. “It is really a shifting sea.”

As the Jan. 1 breakup approached, many equipment manufacturers worried that they would face difficulties in selling to the Bell phone companies, firms that had made virtually all their telecommunications equipment purchases from Western Electric. The fear was that the regional procurement experts would favor products made by AT&T Technologies, the new name for Western Electric.

In some cases, the exact opposite has taken place, according to industry insiders, and, for the most part, regional phone company officials are bending over backwards to buy products from companies other than AT&T. In part, that is due to a certain tension between AT&T and its offspring, and in part to the desire of procurement staffs to find the best bargains for high-technology goods.

“There is a little bit of animosity between AT&T Technologies and the Bell companies, a lot of which exists because the Bell companies view AT&T as their competitor,” said Robert LaBlanc, a leading industry consultant and a member of the board of directors of TIE/Communications Inc., a major equipment manufacturer. “They went from being bedfellows to winding up at the opposite ends of the court,” said analyst Steven Chrust at Sanford C. Bernstein & Co.

Furthermore, regional company executives are under such pressure and increasing scrutiny as heads of newly independent, publicly traded companies that old loyalties fade quickly. At U S West, Rey Wolbert, a purchasing vice president, said that his company has saved about $15 million this year as a result of

See PHONES, G11

Phone Equipment Market Booms

PHONES, From G1

having competitive bidding on $131 million in contracts awarded to AT&T and Northern Telecom.

Philadelphia-based Bell Atlantic, for instance, has agreements with 11 manufacturers of customer equipment, and Ameritech has signed deals with Northern Telecom, Ericson, NEC, TIE, and AT&T Technologies, as well as with four smaller companies for data communications products. "What we are seeking is the technology and equipment that best fits our customer needs," said Ameritech's Weiss. "We will go wherever it is to get it."

The difficulties of those relationships are confirmed by several regional company officials. "We met with the Western people and went over their total product line, and they just couldn't meet what we were looking for," said Dick Perry of FirstTel Information Systems, a subsidiary of U S West, the Denver-based holding company spun off from AT&T. "They were rather inflexible on terms and technology, and their marketing strategies and ours have a tendency to conflict."

As a result, U S West has signed major consumer premises equipment contracts instead with TIE, NEC America, and with ZTel, a smaller New York company—agreements worth a total of more than $100 million. TIE has signed contracts to deliver products to each of the seven divested regional companies, while NEC Telephones, the NEC America subsidiary, has contracts with five of the seven, all excluding Nynex and Pacific Telesis, and with Southern New England Telephone, a company in which AT&T had a minority interest. Analyst Frederick Ziegel of Salomon Brothers estimates that the NEC contracts for smaller equipment total between $50 million and $75 million.

Louis Bender, vice president for business development at NEC Telephones, oversees a marketing staff of about 250 people, and he said that he expects his firm's business with the regional holding companies to show 100 percent growth this year over 1983. "Divestiture has made it easier to sell to the Bell company market because the up-front costs of selling to smaller organizations is less," Bender said.

For most of last year, AT&T officials were reluctant to sell high-quality consumer and low-end business products to the regional companies, fearing their competition. To a certain extent, that strategy has changed, although observers say AT&T will have a hard time overcoming inroads made by competitors. "By this time, the regional companies are saying, 'My goodness, why do I want to buy from them?' " LaBlanc said.

While the post-divestiture market for smaller residential and business products has bloomed for more than a dozen large and small domestic and foreign companies, a more difficult market to crack has been the mammoth multibillion-dollar central-office field.

Only AT&T Technologies and Northern Telecom Ltd. have made sales on that front to the regional firms because the complex central-office equipment requires months of testing and standards approval before purchase and installation.

And even there, regional company officials claim they are working diligently to approve products from other manufacturers. "We need to make a big effort to get other qualified vendors," said Pete Curley, assistant vice president for purchasing for the regulated side of Bell Atlantic's business.

But because that process is slow, Northern Telecom has been able to take advantage of its foothold in high-priced digital switching systems established before divestiture, a head start that makes it perhaps the major short-term beneficiary of the breakup of the Bell System.

Northern Telecom is "the hands-down winner by far," said Salomon Brothers' Ziegel. Just recently, for example, Pacific Telesis signed a contract in the $250 million range for major switching equipment with Northern Telecom, according to Roger Cole, district staff manager for procurement at Pacific Bell. Without further detail, Cole said AT&T Technologies was considered in that bidding.

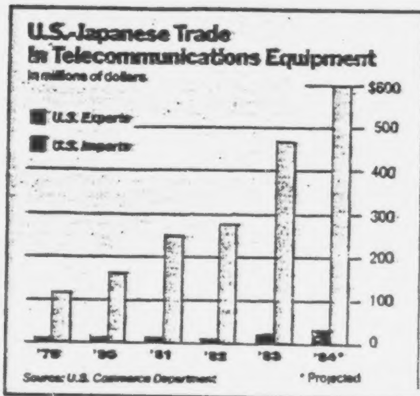
Since 1971, when Northern first came to the United States, sales here have grown from $30 million to about $1.5 billion. And the company's U.S. subsidiary expects to record sales of $500 million this year alone for central-office equipment from six of the seven regional companies, up from $125 million in 1982 and about $300 million this year.

Moreover, sales of Northern Telecom digital switching equipment to the regional holding companies will exceed the company's sales of that gear to other local phone firms this year for the first time. E. F. Hutton & Co. Inc. analyst Charles Nichols predicts that Northern Telecom sales to the Bell companies will rise to between $730 million and $840 million in 1985.

AT&T marketers say, however, that they are catching Northern Telecom, rebounding from what one official said was a 1983 market share of 5 percent to 10 percent in the $1 billion digital-switching-equipment market to close to 50 percent this year. "We're starting at a later point, but we're on equal competitive footing in 1984," said Tom Herr, AT&T Technologies' general manager for network market planning and management.

But in Herr's view, that narrowly divided, competitive marketplace will include more and more foreign players, particularly from Western European companies such as L. M. Ericson and NEC, which has yet to enter the digital-switching business in a major way in the United States.

Business Day
The New York Times



Source: U.S. Commerce Department

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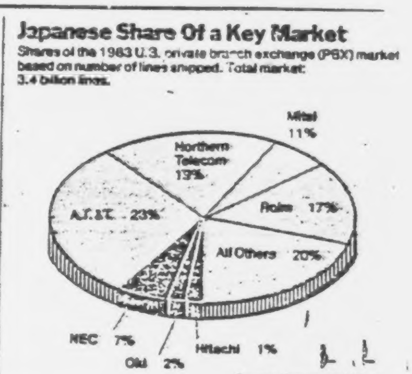


Source: Hambrecht & Quist

The New York Times / June 2, 1984

Bell Split-Up a Boon to Japan

Sales to U.S. Growing Fast

By ANDREW POLLACK

Special to The New York Times

TOKYO, June 1 — The breakup of the American Telephone and Telegraph Company and other steps to deregulate the American telephone business have opened the market to competition, as they were intended. But the opportunities are proving just as inviting to foreign companies — notably the Japanese — as to American ones.

"It was one chance not often offered," said Koichi Shimbo, a spokesman for the NEC Corporation, Japan's largest telecommunications equipment company.

Shipments to the United States from Japan have soared in the last two years. In 1983, such exports rose 60 percent, to the equivalent of $470 million, according to Commerce Department figures.

In addition, the Japanese companies are hurrying to set up factories in the United States, both to be close to the market and to avoid possible trade restrictions. For instance, the Oki Electric Company plans to start making car telephones at a new plant in Atlanta this month, and two weeks ago NEC announced that it would build a plant near Portland, Ore., to make transmission equipment.

Technology: The Japanese Challenge

Third article of a series to appear periodically.

NEC is also expanding capacity at its telecommunications plant in Dallas, and intends to double the number of push-button tone telephones made there next year. "In every plant we are looking for space to expand growing operations," Mr. Shimbo said.

As shipments from Japan have grown, the United States trade deficit has worsened and tensions have increased. In 1983, for the first time, the United States imported more telecommunications equipment than it exported.

Pressure has mounted in the United States to have Japan and other nations open their markets as well. The International Trade Commission is investigating whether the A.T.& T. divestiture opened the market to foreign companies, and it is to report in the middle of June. And Senator John C. Danforth, a Republican from Missouri, introduced a bill a month ago that would penalize nations that do not open up their own telecommunications markets.

Fearful of trade friction, the Communications Industry Association of Japan, a trade group, has cautioned its members to avoid explosive increases in exports and to build factories in the United States, according to

Continued on Page 33

Bell Split-Up Proves a Major Opportunity for Japan

Continued From First Business Page

Haruo Ozawa, its president.

"We have learned lessons in the experience with automobile exports to the United States and semiconductor exports to the United States," he said in an interview.

Telephone makers in Hong Kong and Taiwan have also seen their exports to the United States grow considerably in the last year, and some Canadian and European suppliers are also making gains. But the Japanese are expected to be the biggest beneficiaries of the opening of the American market. Japan already accounts for 40 percent of American telecommunications imports. It ships twice as much equipment to the United States as any other nation.

Related Computer Market

Japanese inroads are also the most worrisome to American companies because telecommunications and computers are increasingly overlapping, and Japanese companies sell both. The Japanese companies clearly hope that their sales of telecommunications gear will increase their sales of computers and office automation systems.

In most nations, telecommunications are handled by a Government monopoly that offers few opportunities for foreign suppliers. In the United States until several years ago, most telephone equipment was rented to customers by the local Bell telephone companies, which obtained most of it from A.T.&T.'s manufacturing arm, Western Electric.

In the last several years, however, after court decisions sanctioned private ownership, customers increasingly have been buying their own equipment, opening the market to new suppliers. The Bell breakup accelerated that trend and severed the ties between the local Bell companies and Western Electric. The Bell companies, which are now allowed to sell equipment but not to make it, are searching for new suppliers. And the Japanese companies are good manufacturers with a low-price advantage.

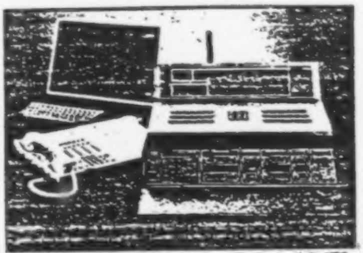
Still, they have had trouble cracking the American market because of weak distribution. One solution is to have the Bell operating companies distribute Japanese products.

Some Japanese companies have already won contracts to supply the Bell operating companies with private branch exchanges, which are electronic switchboards that transfer calls within a building, and key systems, which are telephone sets used by businesses with only a few telephone lines.

"The breakup of A.T.&T. is really a godsend for the Japanese," said Marc Brien, an analyst with Northern Business Information, a market research firm in New York.

NEC is expected to gain the most. Once known as the Nippon Electric Company, NEC was started in 1899 as the Japanese arm of A.T.&T.'s Western Electric Company, and it still shares some phone company traditions and a product line as broad as A.T.&T.'s.

"They are our parent," said Shozo Shimizu, senior vice president in charge of international operations. NEC, one of the most internationally minded of the Japanese companies, refers to the United States as its "second home market." It has operated in the United States for 20 years, but with only modest success until recently.



Sales of Japanese telecommunications products, like those made by NEC, are rising as a result of the breakup of A.T.&T.

Now it has contracts to supply five of the seven regional holding companies with either PBX's or key systems. It will also supply Connecticut's Southern New England Telephone Company, which was partly owned by A.T.&T. and now is independent.

These contracts should be worth a minimum of $50 million to $100 million to NEC over the next two to three years. "We expect more than this, but there's no assurance," Mr. Shimizu said in an interview.

Others are less reserved. "With these contracts, NEC has so improved its distribution that it can be considered the major beneficiary of the Bell breakup," Northern Business Information said in a report. NEC's share of the $3 billion PBX market in the United States should at least double, to 10 percent, and the company could become a leader in the market, the research firm said.

Another company expected to benefit is Fujitsu Ltd., Japan's largest computer company. Fujitsu owns a majority stake in American Telecom Inc., a California concern that received contracts from three of the seven Bell companies. They could triple its business, according to analysts.

Aggressive Pricing

Other Japanese companies are gaining in other product areas, such as the cellular mobile telephone market. Consumer electronics companies have also focused on the consumer telephone market. And a major export assault is starting in optical fiber communications.

"The Japanese are prepared to buy into the market," said William E. Crowley, who heads Japan operations for the Rolm Corporation, a California manufacturer of PBX's.

With competition heating up in the American market, the lower Japanese prices are a big advantage, giving the Japanese a chance to enter the market with aggressive pricing. Many American companies, in addition to the Bell operating companies, are starting to turn to Japanese manufacturers so they can stay competitive.

The GTE Corporation recently agreed to buy PBX's from Fujitsu, and A.T.&T. sells car telephones made by Hitachi. TIE Communications, a major supplier of key telephone systems that has received contracts to supply all seven of the Bell operating companies, obtains much of its gear from Nitsuko Ltd., a relatively unknown company.

Americans have complained that Japan has had a protected home market. The Nippon Telegraph and Telephone Public Corporation, the Government-owned telephone company, buys most of its equipment from a small family of suppliers — led by NEC, Fujitsu, Hitachi and Oki — which gives these companies a huge volume of sales in the home market. Americans also contend that N.T.T. pays inflated prices for such equipment, making it easier for Japanese companies to cut prices abroad.

"It gives an umbrella to Japanese companies," said George A. Neil, president of Corning Japan Inc.

Corning, a major supplier of optical fibers, complains that N.T.T. is paying two to three times the world price for optical fiber cable. The Japanese reply that the price is high because N.T.T. is demanding higher quality.

N.T.T. also helps its suppliers with research, conducted at N.T.T. Labs. Patterned after Bell Labs in the United States, N.T.T. labs has a research budget about one-fourth the size of Bell Labs' $2 billion budget. At four sprawling facilities, N.T.T. engineers are developing everything from microscopic lasers to computer chips to machines that read Japanese handwriting. Much of the technology is transferred to its suppliers.

But this system has its drawbacks. As a monopoly, N.T.T. has been slow to introduce some of the latest electronic technology and services. N.T.T. will not start 800-number service until next year. Computer-to-computer communications networks are far less sophisticated than in the United States. Even pay telephones here lack the capabilities of the American system — callers are cut off with scarcely a warning when their time runs out.

Japanese equipment suppliers reflect this weakness. While they may be competitive with the American companies in individual products, they lag in their ability to produce large complex systems, especially those involving software.

Indeed, Japanese companies have failed in their efforts to supply digital central office switches — complex machines used by telephone companies to route calls. NEC had to remove the first two such switches it installed in the United States because of software problems.

Upheaval in Japan, Too

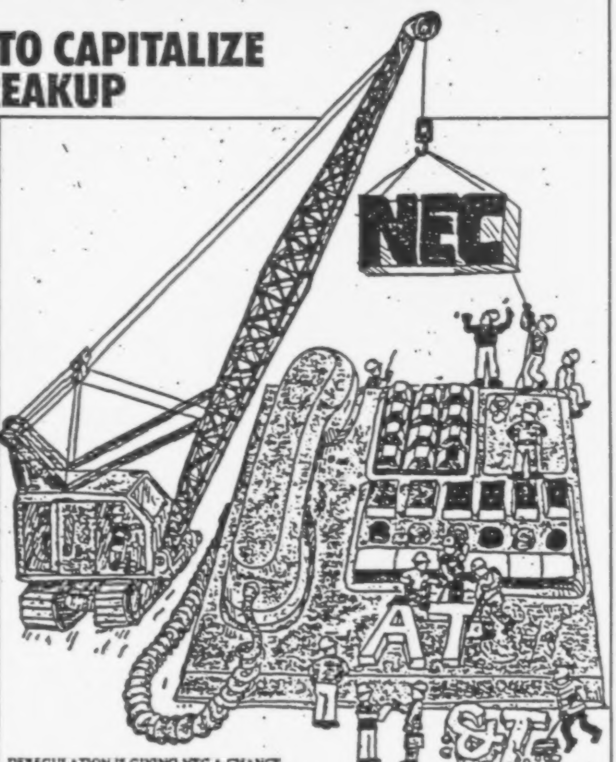
But now the Japanese phone system is undergoing an upheaval.

N.T.T. has started development of the Information Network System, a huge project to turn the Japanese phone system into a superhighway for the transmission of computer data, graphic displays and video as well as phone conversations. At the same time, the Japanese Parliament is expected to pass legislation this year to turn N.T.T. into a private company and allow competition in the Japanese market to spur innovation.

While both the information network and the N.T.T. restructuring are aimed at improving Japan's own phone system, the developments could affect the competitiveness of Japanese companies abroad.

JAPAN

HOW NEC AIMS TO CAPITALIZE ON THE BELL BREAKUP



DEREGULATION IS GIVING NEC A CHANCE TO PUT ITS STAMP ON THE U. S. PBX MARKET

The deregulation of American Telephone & Telegraph Co. is generating tremendous surprises for the U. S. economy. One of the most unexpected may be that the Japanese, through NEC Corp., stand to become major beneficiaries of the breakup.

NEC, long an also-ran in the U. S. communications business, plans to double its 4%-to-5% share of the multibillion-dollar market for private branch telephone exchanges (PBXs). By selling to the seven newly created regional holding companies that used to buy mainly from AT&T's Western Electric Co. subsidiary, NEC hopes to use sales of its PBXs to gain a back-door entry into the booming office automation market.

"All at once the U. S. has become an open market," exults Ryuichi Toya, a manager at NEC's North American division. "If you have a good product, you can ride the wave. That is what we've done: We see ourselves as a winner."

The AT&T breakup was a much-needed boost for NEC. Although it operated a network of 100 distributors in the U. S., NEC had difficulty competing with the 15 American, Canadian, and European companies vying for the market. So when AT&T announced in January, 1982, that it would divest its operating companies, NEC sped up product development and started talks with the seven new companies, which could be in strong positions to sell PBXs. "We knew the gate would only be open from 1984 to 1985," says Toya. "Those that didn't have a market share by 1986 could be squeezed out."

MORE POWERFUL. NEC has already won contracts to supply U. S. West, Ameritech, and Bell Atlantic, three of the seven new companies, with an advanced new PBX (page 179). And Southern New England Telephone Co., which will still be partly owned by AT&T after Jan. 1, plans to combine the new NEC product with Wang Laboratories Inc. computers to create its own office automation system. NEC estimates that these contracts alone will bring in more than $100 million in the next two to three years.

To win the contracts, in September NEC abruptly scrapped its four PBX models and replaced them with a single, more powerful and versatile system. The NEAX 2400 allows companies to expand the PBX or add new features without having to rewrite the software or buy a new system. "It is the first system that has everything in one machine," boasts Toya. Since the machine uses the same software for 300 or 5,000 phone lines, service and maintenance are easier.

Canada's Mitel Corp. announced a similar system two years ago, but it has suffered from delays on which NEC was quick to capitalize, analysts say. "We moved in just as Mitel's reputation was at a low ebb," says Toya. But competitors say NEC could slip up like Mitel. Many of the NEC system's most sophisticated features have not been completed. Competitors also charge that NEC is winning contracts with low prices. Says a North American telecommunications executive in Tokyo: "They price very aggressively and are willing to take sustained losses for a sustained period of time to gain market share."

POSSIBLE PITFALLS. The keys to NEC's success will be how it handles its distribution, support, and services, says an executive from one U. S. competitor. "Whether you can stay in touch with the marketplace without a direct-sales force—that's the difficulty," he says.

NEC is confident it will avoid such pitfalls. It will manufacture half of its PBX systems in its plant in Dallas starting next year. To help its distributors service their customers, NEC's U. S. subsidiary, NEC America Inc., based in Melville,

N. Y., will double its staff of 200.

NEC sees its PBX customers as potential buyers of other office automation equipment—including small business computers—that NEC has had trouble selling in the U. S. so far. For every $100 million worth of PBXs it sells its customers, an additional $50 million of sales in local area networks, terminals, and other equipment linked to the PBX will be up for grabs.

But the competition in the new era of telecommunications deregulation will be ferocious. Computer manufacturers and communications equipment makers are joining up to tackle the potentially huge office automation market: IBM with Rolm, Honeywell with Ericsson, Olivetti with CIT-Alcatel. "They see themselves going up against IBM in the future," says Charles Robbins, a research director at International Data Corp. "But NEC doesn't need anybody: They've got the chip technology and all the components. And now they've gone out to get the right salespeople." ■

COMPUTERWORLD, March 12, 1984

Breakup seen opening up U.S. market to Japanese

NEW YORK — The breakup of the Bell system will open the U.S. market to a flood of Japanese telecommunications equipment, according to report findings recently released here.

According to the report, "Japan, Inc. in the Telecommunications Market," published by Northern Business Information, Inc. (NBI), divestiture has fundamentally altered the nature of competition in U.S. telecommunications markets in several ways, all of which will benefit the Japanese.

The Bell breakup has breached the supply line between AT&T and the former Bell operating companies, the report claims, making the new regional holding companies potential customers of Japanese transmission and central office equipment.

The report contends that the regional holding companies have already shown that they intend to be major suppliers of subscriber switching equipment procured from Japanese firms.

Japanese-made key systems

All seven regional holding companies, plus AT&T affiliate Southern New England Telephone (Snet) are entirely dependent on Japanese-made key systems, according to the report, and five regional holding companies plus Snet will supply Japanese private branch exchanges (PBX).

NBI said that divestiture exposes AT&T's embedded base of obsolete electromechanical key systems and analog PBXs. This represents a potential new market for Japanese products worth about $20 billion.

Divestiture has changed the nature of competition in the U.S. telecommunications equipment market, according to the study. The historical relationship between AT&T and its customers has been weakened or broken entirely.

In the future, more emphasis will be placed on technological and cost considerations; this, NBI asserted, will tend to favor the Japanese relative to many of their North American and European competitors.

The initial stage of deregulation, the creation of the interconnect market, led to today's situation where, according to the researchers, Japanese companies made the largest proportion of key systems sold in the U.S. in 1983.

The final stage of deregulation, the breakup of the Bell system, will allow Japanese suppliers to expand their share of the PBX market to as much as 40% by 1988, the report contends.

For all but the smallest Japanese companies, establishing a large installed base of digital switching products is the key to penetrating the entire range of U.S. markets for electronic information technology.

The growing Japanese position in telecommunications and the demand that it will promote for other Japanese information technologies hold implications for the entire U.S. economy, according to NBI.

In 1983, the Japanese enjoyed a surplus in telecommunications trade with the U.S. of $389 million. Combined with a related surplus of $1.4 billion in electronic components and $767 million in computers, the total becomes $2.5 billion, nearly 13% of the entire $20 billion trade deficit the U.S. held with Japan in 1983, the report states.

The 174-page report is priced at $995 and is available from NBI, located at 66 W. Broadway, New York, N.Y. 10007.

Pullout Section CommunicationsWeek

Special Report

CloseUp

An In-Depth Look At The People, Trends And Issues Shaping The Communications Industry

PBXs Vie For Office Systems Limelight

But Most Vendors Have Yet To Deliver Promised Capabilities For Office

By Barbara Kerbel

The day of the PBX as a device used solely for voice switching is going the way of plug boards and crank telephones. Vendors looking to maintain or establish market share in the PBX market are going to have to make strong statements in the areas of data switching and office automation.

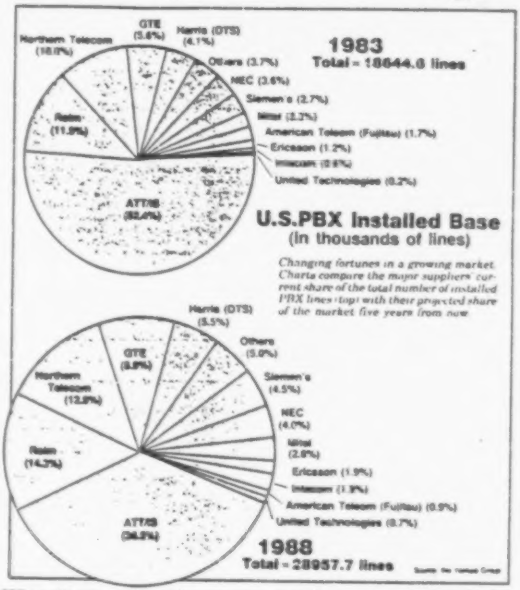
Every major vendor has made promises in that direction but for the most part they have not yet positioned their switches to serve as office controllers, analysts say. Intecom Inc., Dallas, and AT&T Information Systems, Morristown, N.J., have gone the furthest in implementing applications, while Rolm Corp., Northern Telecom Inc., Mitel Corp., and NEC America Inc. have yet to deliver in office automation, the analysts said.

But every vendor recognizes that the move toward office automation—if not tomorrow, then soon after—is the direction the market is taking, and vendors would like to see the PBX become the controller for future office systems.

Major office-systems companies—such as Wang Laboratories Inc., Digital Equipment Corp., Sperry Corp., and NEC Information Systems Inc.—are, in fact, expected to expand into the PBX market in the next two years, most likely through private-label deals. Their expertise in office automation and their wide avenues of distribution make them desirable partners for PBX vendors looking to establish themselves as one-stop shops.

In addition to the thrust toward total office automation, other factors shaping the PBX market include:

- The increasing significance of add-ons, which serve as a revenue source from installed bases, differentiate one system from another, and combat the kind of price erosion seen over the past year in voice-only systems.
- Research and development spending, particularly in the area of software. Mitel Corp., Kanata, Canada, might have missed its chance to corner a sizable piece of the market with its SX 2000 switch because of software problems that delayed shipments for more than a year, analysts say.
- A movement toward shared-tenant services through which tenants of a building have access to office systems and voice data facilities as part of their leases. This kind of contract is offered primarily in new buildings that are wired for office automation when the building is constructed.
- Post-sale service, which many vendors cite as a major influence on buying decisions.
- The presence of the regional Bell holding companies as distributors.
- How many Centrex users will convert to PBX installations over the next few years.
- Price stabilization between $800 and $1,100 per port at the retail level.



U.S.PBX Installed Base (in thousands of lines)

Changing fortunes in a growing market. Charts compare the major suppliers' current share of the total number of installed PBX lines (top) with their projected share of the market five years from now.

The market has been led over the last five years by AT&T and its former manufacturing arm Western Electric Co., but AT&T has seen its market dominance slashed from almost 50 percent of the total number of lines shipped in 1978 to about 22 percent in 1983. Northern Telecom and Rolm continue to hold the No. 2 and No. 3 positions, with 16 percent and 15 percent of the market in 1983. Mitel, clearly the leader in the market for fewer than 100 lines, holds a solid fourth place, with 12 percent of overall market share.

Intecom, with only 2 percent of the market share in 1983, and NEC America Inc., Melville, N.Y., one of four companies with a 4 percent share, are expected to challenge the leaders at the high end aided by distribution deals with the regional Bell holding companies.

As a whole, the PBX market reached about $3 billion in 1983, not quite doubling the $1.8 billion worth of PBXs sold in 1978. The four market leaders accounted for more than two-thirds of the approximately 3.67 billion lines shipped in 1983.

Analysts project 9 percent annual growth for the remainder of the decade with the greatest growth occurring for systems with fewer than 100 lines. But the shakeout that started in 1983 with Rockwell International, Datapoint Corp., Telesciences Inc., and Reliable Electric Co. dropping out of the market is expected to take its toll on some of the approximately doz-

(Continued on Page C6)

BOCs To Bolster Centrex With New Features, Marketing

(Continued from Page C3)

tinue the arrangement beyond the July deadline for separating the two activities. Still, the company expects to hook up 20,000 to 25,000 new Centrex lines this year, according to Nynex's Morea.

Much of the Centrex growth anticipated for this year will be in sales to new and smaller business customers, Morea said. Nynex has 3,000 Centrex customers using fewer than 100 telephone lines each, Morea said.

Nynex is also offering featuring packages, verification of line use, and station rearrangement with minimum lag time, Morea said. Data capabilities of 9.6 kbps should be available by this year's third quarter, he said. Future plans include both Centrex and PBX, Morea said.

Illinois Bell also believes that both products can remain viable and said that it has a long-term commitment to Centrex. The Chicago-based BOC has filed with the Illinois Commerce Commission to deaverage its Centrex rates and restructure rates in other ways to offset anticipated access charge increases.

Standing out in contrast to most other BOCs, Southwestern Bell is anything but bullish on Centrex. The holding company's equipment subsidiary is selling PBXs, and West said the majority of the region's business customers are better served by this equipment.

"Centrex is not state of the art," West said, particularly because it cannot handle high-speed data. Fortune 250 companies surveyed by the Eastern Management Group said that in order to achieve state-of-the-art performance this year, their Centrex systems would need to provide real-time station-message detail recording, the ability to automatically reconfigure networks, and interconnection with electronic telephone sets. Next year they would have to provide digital switching capability of 9.6 kbps, and in 1986 they would need the ability to transmit data at 56 kbps and to interface with T-1 circuits. These are all capabilities PBXs already provide, Fross said.

Centrex can catch up, Fross noted, but it will take a good marketing job on the part of the operating companies. They will have to show concrete features, delivery dates, and pricing schedules, he said. Many potential customers just do not believe that the operating companies will fulfill all their promises, he said.

Furthermore, a BOC selling both Centrex and PBX equipment could end up competing against itself, Fross observed. Each of its separate sales forces would pitch its own product and disparage the others, he said, ultimately hurting overall sales efforts.

PBX Makers Using Multiple Distribution Outlets

(Continued from Page C2)

talked to all of them, but they are in varied states of preparedness for distribution and have a tough road to hoe."

Smith said, "We considered an opportunity to go with someone who may get it all together versus those who have got it all together."

Both Ztel Inc., Wilmington, Mass., and CXC Corp., Irvine, Calif., are signing on value-added dealers as distributors. Ztel marketing and sales vice president Bill Karavatos did not disclose the computer companies that will be OEMing its PNX PBX, but he said that three or four years from now he expects 60 percent of Ztel's sales to come from regional holding companies and interconnects and 40 percent from value-added resellers.

Intecom Inc., Dallas, is relying heavily on the BOCs. The company believes that a strong direct sales and support staff is essential, but while it is building one, it is relying on the BOCs and General Electric Co.

Regarding the BOCs, director of marketing Bob Corcoran said, "All you can take is history. They always have had very, very good support. They do sell multiple systems, but they have enough people in sales and support that I think they will dedicate forces to particular products."

CXC vice president of product marketing and strategic planning Bob Hawk said CXC's Rose PBX, scheduled to start shipping in midyear, is designed so that value can be added easily by resellers. CXC has no intention of establishing a direct sales force, he said. "We will not make the mistake of competing head to head with our distributors."

Ericsson Communications Inc., Garden Grove, Calif., which has signed an R&D pact with Honeywell Inc., will also be using Honeywell's interconnect arm to distribute its PBX line, which Ericsson's direct sales force will also sell.

PBX Makers To Compete With Product, Service Flexibility

(Continued from Page C6)

to offer various kinds of service packages for different classes of service— 24-hour service, business hour service, different kinds of response time," Knopf said that only vendors that deal directly with their customers will have the capability to offer these kinds of contracts.

Mitel expects to ship about 150,000 lines of its long awaited SX-2000 before the end of its fiscal year next February, according to vice president of business development Don Smith. He said Rolm and Northern Telecom switches will be the SX-2000's main competition because although they are older switches, they have large installed bases and well-supported products. "AT&T's System 85 product has not created the excitement we anticipated," he said.

The SX-2000, designed to launch Mitel into the office automation market, was scheduled for delivery in January 1983. Smith said the delays were the result of an underestimation of the time that would be required for software development.

Analysts speculate that Mitel's inability to bring the SX-2000 to market led to the dismantling of an agreement in principle Mitel had with IBM for a joint technology venture. "That was an invalid assumption," Smith said. "I think it had to do with changes in philosophy not related to that product. I know what the state of the product was and don't think the decision was based on the state of the product."

The Motorola 68000-based SX-2000 can support data transmission rates up to 256 kilobits per second over standard two-pair wiring and can accommodate fiber-optic trunks. It supports from 150 to 20,000 lines. Bubble CMOS RAM circuits provide memory, and call processing is distributed through a series of microprocessor controlled switches.

Mitel has not yet announced any pacts with office-systems vendors, but it is considering joint efforts "with a limited number of vendors. When you get into this form of strategic partnering you must be careful," Smith said. He declined to name the vendors Mitel is talking with and said products will not be available until some time in 1985.

Intecom was the first company to bring out a digital PBX that totally integrates voice and data. It delivered its first IBX in 1981 and claims more than 125,000 lines installed in the United States.

The IBX handles voice and circuit-switched data as well as local-area networking and format protocol conversion. The switch was also designed to address the shared-tenant market, an area that is reshaping the PBX market, according to director of marketing Bob Corcoran.

In shared-tenant installations, one large PBX can eliminate the need for multiple smaller systems or key systems, Corcoran said.

Recognizing the need to form relationships with office-automation vendors, Intecom has signed certification statements with Hewlett-Packard, Data General, Perkin-Elmer Corp., DEC, and Wang indicating that their equipment can be interfaced with Intecom's.

Ztel Inc., Wilmington, Mass., introduced its Private Network Exchange (PNX) last spring and said it expects to begin shipments this summer. The product combines PBX and local-area network functions in a token-ring architecture compatible with the IEEE 802.5 token-ring standard.

Bill Karavatos, marketing and sales vice president said the PNX will be competing with AT&T's System 85, Rolm's CBX-II, Intecom's IBX, and Northern Telecom's SL-1. "AT&T is in an also-ran category until they figure out what they want to do with themselves. Eventually they'll be competitive again," Karavatos said. Ztel is marketing the IBX through U.S West Inc., interconnects, and computer companies serving as OEMs.

GTE Business Communications Systems Inc., Stamford, Conn., claimed about 4 percent of the PBX market pie in 1983. Its Omni SIII, which handles from 800 to 2,048 ports, is "selling like hotcakes," according to Braj Bhushan, director of product planning.

Bhushan declined to say just how many Omni hotcakes GTE expects to sell in 1984. But at $600 to $700 a port, the system is the least expensive of the third-generation systems—those with all-digital signaling and switching that can handle 56 kbps voice and data for intrafacility transmission—The Yankee Group, Boston, said. GTE expects to compete successfully against AT&T's Dimension and System 85s. "We see System 85 as a fairly high-priced switch in terms of its capabilities for integrated voice-data. With the addition of data capability on ours, we think we have clear potential to do one-upsmanship," Bushan said.

The Omni SIII has a dual-bus architecture that allows simultaneous high-speed voice and data transmission over existing single twisted-pair wiring. A data-switching option for the Omni SII is slated for availability in the third quarter, GTE said. The Omni SIII has an X.25 gateway to public packet-switched data networks, and a T-1 trunk interface is available.

In the next year-and-a-half, GTE plans to specifically address the office-automation market, but Bhushan declined to discuss any plans in that area. GTE is spending about $20 million in R&D aimed at expanding the Omni line this year, he said.

Ericsson Communications Inc., Garden Grove, Calif., has not yet started selling its MD-110 in this country although it has installations or orders for more than 300,000 lines overseas, according to marketing programs manager Per Borgesson.

The MD-110, which supports from 150 to 20,000 stations, is based on a Line Interface Module (LIM) and a Group Switch (GS). Every LIM is self-contained and supports up to 200 extensions as a stand-alone PBX. Group Switches serve as interfaces between LIMS.

Borgesson said that because the MD-110 uses ceramic components, it does not require the power (air-conditioning) needed by the plastic components used by other vendors. "Some competitors require six or seven times more power," he said, citing Intecom's IBX as especially high in power consumption.

CXC Corp.'s Rose PBX also has not started shipment, but is expected to toward midyear, according to Bob Hawk, vice president of product marketing and strategic planning at the Irvine, Calif.-based company. Hawk said that feature phones will become an increasingly significant trend in the PBX market. "I think this trend will be as powerful as the integration of voice and data. It has the potential to update the technology of the telephones on peoples' desks."

The Rose's strength does not lie only in its messaging telephones, Hawk said. It integrates a local-area network using both baseband and broadband technologies. The system's distributed design allocates bandwidth—as required by traffic flow—directly from the telephone. All software, Hawk said, was built from the ground up to handle data and voice messaging capability.

The market will not see delivery of production shipments of CXC's Rose PBX until midyear, Hawk said.

Vendors Aim To Position PBXs As Office Controllers

(Continued from Page C1)

on companies that have less than 4 percent of the overall market.

Comparing the PBX market to the auto industry, Ken Bosomworth, president of International Resource Development Inc., Norwalk, Conn., noted that "there are too many manufacturers. With the automobile, Mercedes does quite well at the top, and Toyota holds its own at the bottom. There is room for both, but there isn't room for 15 Mercedes and 15 Toyotas."

Nevertheless, new entries are expected over the next two years from companies including Nixdorf Computer Corp., Thompson CSF, and Matsushita Electric Industrial Co. Ltd.

Northern Telecom president of market development and corporate planning Bob Dyer said despite the heightened competition, his company is positioned to hold onto its current market share—about 16 percent according to Probe Research Inc., Morristown, N.J.—but is not getting smug about that share. "One must never forget that it's the customer who buys," Dyer said.

And the customers are buying.

Northern's still-evolving SL-1, which handles from 60 to 6,000 lines, has two million installed lines—more than 5,000 PBXs—and shipped in excess of 600,000 lines last year. That figure is expected to grow by about 30 percent in 1984, Dyer said.

Dyer said Northern Telecom, based in Nashville, Tenn., does not believe in generations of PBXs or in obsolescence—a reasonable statement for a company whose major product has been on the market since 1975. Equipment, he said, should be able to be updated in place and should be compatible with office-automation systems from many vendors. "We see the PBX as the ideal vehicle to do that. Customers don't want to throw out what they have or get locked in," he said.

Vendors must provide protocol converters and standard interfaces that connect their products to other information sources and office-automation applications, Dyer said. Northern Telecom introduced its Open World program one and a half years ago with the goal of positioning the SL-1 as an integrated office controller by adding new functions and interfaces for equipment offered by office-automation vendors including Digital Equipment Corp., Sperry Corp., Wang Laboratories Inc., Hewlett-Packard Co., and Data General Corp. The agreements allow for data distribution and protocol conversion.

Under its pact with DEC, Northern Telecom designed the Computer-to-PBX Interface (CPI) based on the North American 1.544-megabits-per-second T-carrier standard. It allows two-way data communications between computer terminals and compatible computers through the SL-1 over standard phone wiring or T-1-compatible media.

The company's Digital Trunk Interface (DTI) allows the SL-1 to transmit voice and data in digital format directly to another SL-1 or SL-100 using any T-1 medium. It also allows connection to other PBXs that can be connected to a T-1 trunk.

Dyer said he expects price erosion to bottom out this year as vendors add new features and service options to their products and charge for that added value. Decreasing hardware prices have prompted "a wide range of bells and whistles sold under the hype that they're great and super and therefore they should be purchased," he said.

But the key to success, Dyer said, is the cost-effective merging of voice and data in an automated environment. "The manufacturer that can design the technology to do that economically will have a major niche in the marketplace."

Foremost among these are Japan Inc. and AT&T. "AT&T Information Systems will get their act together. Just their sheer size suggests they will. They're formidable competitors," he said. "And the Japanese will fight a good price battle. Their hardware is very good, and most have established at least token manufacturing facilities here. But they have weaknesses in distribution, software problems that are unresolved, and their post-sales service may leave something to be desired."

In general, marketing strategy for the PBX market is changing, Dyer concluded. "The days of just shoving technology at the customer are gone. The office of the future is a myth," he said. "We human beings will be automated or displaced only to the extent we allow it to happen. Any terminal input/output device should be friendly enough to be used without any hassle to the human being. We are not out just to automate the office, but to humanize it."

Like Northern Telecom, Rolm also sees its PBXs—the CBX line—as a total business communication system, according to Bill Krepick, director of group marketing at the Santa Clara, Calif.-based company. In addition to IBM, the company is working with Hewlett-Packard, DEC, and Data General to have interfaces with their office-automation systems. "We believe our system architecturally is going to allow someone buying a switch today to go 10 or 15 years out. Our architecture will be able to support interfaces to local area networks and interfaces to video," he said.

Rolm last year scrapped plans for a series of office products but did introduce its Cypress voice/data terminal. And it is expected that IBM, which now owns 22 percent of Rolm with the option to increase its equity to 30 percent, will heighten Rolm's presence in the office-automation area.

Rolm's modular CBX-II is based on distributed processing architecture and can handle up to 10,000 voice/data ports. All installed CBXs can be upgraded to CBX-II capacity, the company said. Price of asynchronous data switching is about $500 a line.

New software features are introduced annually for CBX products and in most instances do not require new hardware for implementation, Krepick said. "We tell customers to look at how often a vendor brings out an application and at what hardware changes are needed to implement it. It can get very expensive very fast if you need a lot of hardware to upgrade your switch."

Selling factors in Rolm's favor, Krepick said, are built-in self-test and maintenance made possible because the features are built into the switch, and ergonomics. "Every manufacturer talks about ergonomics. But the only way to see the difference is to sit down and use the systems," he said.

Krepick also talked about affordability. Rolm has always been high-end in terms of price, and the CBX-II is, by Krepick's estimation, 10 percent above AT&T's System/85. But the manufacturer claims that the individual phones available for both systems give its customers the option to buy phones that are priced considerably below AT&T's now—and still have the capability to attach a data accessory in the future.

Krepick maintained that AT&T, though a major force, is less of a threat today than it was two or three years ago because of "divestiture chaos." He said that on a technical basis, product for product, Rolm has more applications, features and flexibility to handle future requirements.

"The one area where they are unique is in the political muscle they have to fall back on—people on boards of directors and their position as a local employer, for example. That can be heavy muscle," he said.

AT&T may have the muscle, Krepick said, but Rolm has the advantage of experience in the maintenance of digital switches. "We tell customers to look at applications and products and ask questions about who is actually trained to maintain the digital switches. There's a vast difference between someone who once handled residential services and someone who's used to handling business services."

Needless to say, AT&T disagrees. Its market strategy, according to staff manager Gene Salome, is to become the leader in office-automation systems for integrated offices. "We believe the information controller for offices will be the PBX," he said. The System/85 is AT&T-IS' first entry in that area.

Salome denied that the System/85 obsoletes the company's installed Dimension systems and said that AT&T, in fact, still markets the older system to users that do not require the functionality of the 85. He denied speculation that the company has offered Dimensions in lieu of System/85s because production has not been ramped up sufficiently for the newer product.

But he did say that deliveries have been affected by chip shortages and that orders have surpassed the 100 systems AT&T said it would be able to deliver during its first year of shipment.

Salome could not be pinned down to a specific backlog or availability schedule, but he did say the earliest delivery would probably be in the September time frame—for a simple unit. In many instances, he said, delivery is scheduled for a year and a half down the road because of customer request. "At new buildings, for example, owners want everything to go in at once, so delivery times have to be juggled."

Charles Knopf, district manager market requirements, customer information sytems at AT&T-IS said AT&T recognizes the importance of interfacing with office systems. To date, Hewlett-Packard, Data General, Wang Laboratories, and Honeywell Information Systems have announced support of AT&T's Digital Multiplex Interface (DMI) that allows high-speed transmission between local terminals and computers as well as between remote terminals and computers.

AT&T has posed DMI as a direct challenge to Northern Telecom and its CPI. Both interfaces are vying to become industry standards and are recruiting supporters from among the ranks of the computer manufacturers. To date, however, neither interface has been commercially implemented.

Knopf also cited service as a way for vendors to differentiate themselves in the PBX market. "It will be important

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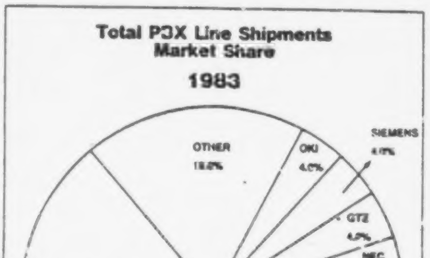


Source: Probe Research Inc.

BOCs Revamp Centrex Service To Vie With PBXs

But With Bell Cos. Pursuing Both Markets, PBX Makers See New Push As Minor Threat

By Karen Lynch

After years of being treated like an unwanted stepchild by Ma Bell, Centrex is being marketed with renewed vigor by the divested Bell operating companies. But vendors of rival PBX systems, which require fewer lines to offer more features, system control and ownership benefits, say they don't view the new Centrex push as much of a threat.

The recent flurry of activity around Centrex has included a slew of new product enhancements for the service, attempts by the BOCs before various state commissions to keep Centrex rates stable and competitive, and efforts at broadening the service's appeal by targeting new markets that the phone companies had previously ignored.

How far these initiatives will go toward stemming the flow of business from Centrex—a regulated service requiring a separate line between each telephone belonging to a customer and the central office—is now under scrutiny.

Studies by Bell Communications Research Inc. (BCR), the central research and support organization owned by the seven regional Bell holding companies, show that the number of Centrex lines in use hit a new high last December, following an 18- to 20-month decline. Centrex use is on the rise in spite of uncertainty over the impact access charges will have on the service, said Thomas Lamb, a Centrex System Service district manager for BCR.

But the uncertainty over the federally proposed charges of $2 to $6 per line on a service that requires far more lines than competing PBXs is keeping industry insiders from projecting just how much ground Centrex can regain. And it's driving the BOC's to their state regulators to try to offset the charges, which are scheduled to go into effect in June.

The upsurge in Centrex sales that BCR has recorded primarily stems from a sales push begun by the BOC's in 1982, Lamb said, and from the lowering of the 100-line minimum a Centrex customer previously had to meet.

Most of the new Centrex business is coming from smaller customers that weren't offered the service before, Lamb said. When many telephone companies began in 1982 and 1983 to lower and even eliminate the minimum line requirement, "the market response was overwhelming," primarily from businesses using 35 to 40 lines, he said.

While some BOC's have designed very attractive Centrex packages for small businesses, "there's a lot of unrest as far as large companies are concerned," said Alan Fross, vice president of the Eastern Management Group, Morris Plains, N.J.

Sixty per[illegible] of the Fortune 250 companies [illegible] use Centrex, Fross said. "Everybody's after that market," which the BOCs are fighting to hold, he said. PBX vendors have been steadily eroding that base, according to Neil Weber, director of product marketing for Harris Corp.'s Digital Telephone Systems Division in Novato, Calif.

The midsized businesses are the customers that have most consistently been lured away from Centrex, Lamb said. PBXs are "very appealing, very effective" to businesses using from 100 to 800 telephone sets, said Dominic Morea, district manager of line of business management for Nynex Service Co., New York.

The BOC's are trying to hold onto their customer bases in all three markets—and some observers question their ultimate intentions. Robert Bennis, manager of communications systems for Westinghouse Electric Corp., described Centrex as "a short-term capability that telephone companies will want to try to hold onto until they can get into the business of providing telephone systems themselves." Fross agreed that the renewed marketing of Centrex is a short-term strategy. The BOC's, which are just getting into the telephone equipment market following the breakup of AT&T, are trying to hold onto their customers until their new equipment businesses are firmly in place, he said. Then they will try to switch those customers over to PBXs, he predicted.

The theory gains strength with an observation of how the unrestricted non-Bell telephone companies are handling sales to businesses. GTE Telephone Operations is pushing PBXs "because it is a better deal for the customer price-wise," according to Alan Galletly, director of public affairs for GTE Telephone Operations, part of GTE Service Corp., Stamford, Conn. GTE, the largest non-Bell telephone company, is also selling Centrex—but not aggressively, Galletly said. Many of the other independents are working under a similar principle, he said.

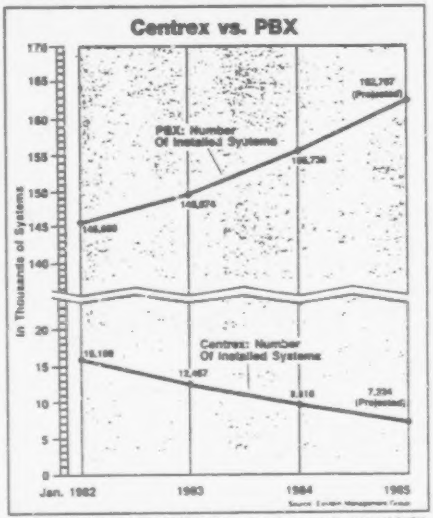
And while most regional Bell holding companies are stressing continued allegiance to Centrex, at least one concedes that its emphasis may lie elsewhere. "It's almost a natural phenomenon" that business customers are switching to PBXs, said Claude West, assistant vice president for strategic planning with Southwestern Bell Corp., Saint Louis, Mo. "We have a hard time cost-justifying Centrex" for customers with more than 100 lines, he admitted.

The migration of customers to PBXs is not a new tactic. AT&T adopted the policy in the late 1970s and early 1980s, Fross said. "For a long time, AT&T had told the BOCs to try to dead-end Centrex," Fross explained. Prices went up and potential enhancements were ignored, he said.

After years of neglect, can Centrex now catch up?

Centrex is being touted as a service that offers its customers the high reliability of a central office machine and the freedom from responsibility for maintaining the system, according to Gary Handler, assistant vice president of new services planning and implementation for BCR. Centrex also offers an almost unlimited capacity for growth and dynamic swings in volume, he said.

Features like conference calling, direct-inward dialing, automatically identified outward dialing, intercom, call transfer, three way calling and others can be accommodated.



Source: Eastern Management Group

THE BATTLE BETWEEN CENTREX AND PBXs: The above chart compares the continued decline of the number of installed Centrex systems since 1982 with the increase in installations of competitive PBX systems over the same period. Figures for 1985 are projections.

Centrex's inability to handle data well has proved to be a big drawback, industry observers said. But now BCR and AT&T Technologies Inc. are both working toward this end.

AT&T Technologies plans to provide the technology for simultaneous voice and 9.6 kilobits-per second data capability by next year's first quarter. Data transmission of 56 kbps is also being developed.

Fross said several manufacturers are developing products intended to enhance Centrex. These would provide such features as customer management, voice storage, and dial-up access to X.25 packet-switched networks.

The new positioning of Centrex could have a depressive effect on PBX sales, according to Edwin B. Spievack, president of the North American Telecommunications Association (NATA), a trade association representing the manufacturers and distributors of PBXs and other telephone equipment, is now measuring how much the new Centrex push is affecting previously anticipated growth in PBX sales. "I don't think it's had any current effect," said Jack W. Blumenstein, vice president of Rolm Corp., Santa Clara, Calif. The Centrex market will continue to diminish, West said.

User reaction is even stronger. "I definitely would not put Centrex in," Westinghouse's Bennis said. In fact, Bennis is leaning toward switching to a PBX system for one of the Pittsburgh-based company's plants that is using about 8,500 Centrex lines, he said.

"Frankly, my direction is to move out of Centrex," said a member of the Ad Hoc Telecommunications Users Committee, which represents large users of communications systems. The communications manager, who did not want to be quoted by name, said that he has switched all of his company's facilities except two to a PBX system and may turn to PBX use for the remainder.

Yet despite claims to the contrary, underscored by the BOC's' growing involvement in the PBX market itself, most of the Bell companies said their aggressive new tacks in marketing Centrex, restructuring rates, and enhancing their products are part of a long-term commitment.

Mountain Bell, Denver, has developed a family of products, dubbed Centron, for customers with needs ranging down to six lines. "All of them are selling above last year's forecasts," a spokeswoman said. The telco's parent, U S West Inc., has an equipment subsidiary. "We're competing with them, with Centron, just like we're competing with companies like Rolm," the Mountain Bell spokeswoman said.

Mountain Bell has not decided whether to enter the PBX business through a separate subsidiary, although it has applied to the FCC to keep that option open. "We are emphasizing Centron and are not selling PBXs," the spokeswoman said, adding that that could change within a year.

Nynex's approach is markedly different from Mountain Bell's. The holding company is selling both Centrex and PBXs through the same sales force and is seeking permission to con-

(Continued on Page C7)

Divestiture Changing Shape Of PBX Distribution

By Barbara Kerbel

The divestiture of AT&T has changed the face of PBX distribution in this country.

Until Jan. 1, PBXs were distributed by direct sales forces, by interconnects who resold gear purchased through supply houses, and by AT&T through its local operating companies. But now seven giant new interconnects—the regional Bell operating companies—are in the distribution picture.

Though they are start-ups without installed bases, the regional companies' sheer size and equity positions threaten smaller interconnect companies that cannot compete with their volume-purchasing power. The holding companies also have the potential to quickly garner market share for vendors that—lacking strong direct sales forces—might otherwise flounder in a sea of small regional interconnects.

Manufacturers are now evaluating their distribution strategies, trying to strike a balance that insures the best penetration for their products. The vendors that have secured contracts with the operating companies consider themselves winners, but those that did not are not necessarily losers.

Some, like Rolm Corp., do not want to be part of the multivendor selection offered by the holding companies and maintain that their strategy of direct sales from local bases—with strong interconnect support in some regions—assures customers the best service and support.

Others are dubious about the BOCs' ability to get in gear as strong marketing and support organizations. Bill Krepich, director of group marketing at Rolm, theorized that the regionals will have to fracture their service departments in order to train staff for each line being marketed. "There's no way they'll gain expertise across the whole company to support several lines. I'm confused as to why they didn't pick one horse and stick with it," he said.

Analysts agree that direct sales will play an increasingly important role in selling large systems because companies sinking their dollars into very expensive systems want their hands held by the manufacturers. Some also foresee major office-systems suppliers becoming a leading distribution channel, acting in concert with vendor direct sales forces or on their own.

Northern Telecom Inc., Nashville, Tenn., is covering all bases with an eclectic approach to distribution. The company has a direct sales force, factory-authorized dealers (interconnects), independent telephone companies, and subsidiaries of three of the regional Bell holding companies—Pacific Telesis Group, BellSouth Corp., and Southwestern Bell Corp.—marketing its SL-1 and SL-100 series of switches.

There are those who would criticize the overlapping of these channels in certain areas of the country, suggesting the inevitability of price wars that result in poor service to the end user in the long run. Northern did in fact withdraw its direct sales force last month from 12 Southwestern states heavily penetrated by third parties. The company will, however, sell directly in those states to any users that want to buy directly.

Bob Dyer, vice president of market development and corporate planning, said Northern's rationale is twofold. "We believe the customer should have a choice. And we don't believe any one company can cover the whole country with one channel."

Dyer said Northern plans to continue its multichannnel approach. "We can't emphasize enough the power of the BOC's. We see them as a very reputable powerful source," he said.

Rolm Corp., Santa Clara, Calif., has a totally different philosophy. "We want very strong sales and service capabilities on the local level," said Bill Krepich, director of group marketing. "Others will have two, three, or four distributors in a given area. Some will cut price, and it will become unhealthy for all involved. Where there's not enough profit, the customer gets the short end of the stick."

Krepick said Rolm will continue to build up its own distribution channel. Three-quarters of the company's revenue comes from its own local Rolm companies (RolCos), the remainder from interconnects. Those interconnects do not fear being displaced by an expanding Rolm network, Krepick said.

"They are not afraid. They know they have to perform according to contract, which is tough with required annual quotas, spare-parts inventory, and trained personnel. We have never gone in and taken over a distributor—unless it's failed to deliver or almost gone out of business," Krepick said.

Krepick said he doesn't see the operating companies as the major force that others do. "It amazes me to see how many operating companies have picked up multiple PBXs. There's disaster downstream." The regionals offer "the easiest way to get revenue in the short term," Krepick conceded. "We could have pushed a lot of boxes out of the factory and had healthy sales. Then we would have sat here and said, 'What did we do?'"

AT&T district manager for market requirements Charles Knopf cited the BOCs heritage and said he thinks they have the potential to become major distributors. As to their capability, "We haven't seen it yet. Their staffs have to be trained. They have to learn how to install and maintain," he said.

Knopf said AT&T's direct sales approach allows it to offer the kind of service that will differentiate it in the market. Multiple channels, Knopf said, result in multiple bids, confusing the customer. With small systems, multiple channels might work, he said, but larger systems that are subject to price erosion will not provide customers with "systems tailored to their needs and a service force that offers options. There's a trade-off between how many ways you want to distribute and how much control you want over distribution," Knopf said.

Knopf said he expects to see PBX and office-systems vendors "mutually certifying" each other's equipment and coming up with joint service agreements under which one of the vendors would serve as a master diagnostician to determine where the difficulty in a system lies. This would avoid a finger-pointing battle in which the office-systems vendor blames the PBX vendor—and vice versa—for any bugs in the system.

Knopf does not expect to see office-automation suppliers eating into the PBX distribution market. "You'll see more of a trend toward cooperation than in one company trying to do everything. The market is just too big," he said.

But one analyst, [illegible] Matros, director of PBX market analys[illegible]esearch Inc., Morristown, N.J., thinks [illegible]tems suppliers "will be the single most d[illegible]ctor" in PBX distribution, followed by the [illegible] Without the BOCs or office-automation sup[illegible]s, you're dead in the water," Matros said.

But Matros' prophecy at this point is speculative, and at least one other analyst, managing director George Colony of Forrester Research Inc., Cambridge, Mass., disagrees with Matros' speculation. Colony agreed that the office systems vendors will impact PBX distribution—but not through direct sales.

"The idea that Wang or another major office-systems vendor could go into a Fortune 1000 company and sell a PBX is absurd. It's a comical image. PBX sales are contingent on in-depth knowledge. The telephony market is radically different—it's much more maintenance- and support-intensive," Colony said.

What will impact distribution is the synergy that will exist between office-systems vendors and the PBX manufacturers whose equipment can be interfaced, Colony said. Office-systems vendors ultimately will support interfaces from multiple PBX vendors but will probably align themselves with one. Colony said it is expected that Wang will soon announce such a relationship with Intecom Inc.

Mitel Corp. executive vice president of business development Don Smith agrees with Rolm's assessment that a relatively singular approach works best in the United States. Mitel's products traditionally have been distributed through supply houses to interconnects.

"But to market the SX-2000, we felt we needed to be closer to the people handling the product and wanted as small a number as possible," Smith said. That network is in line, he said, but he declined to name the dealers because some of them still have relationships with other vendors.

Analysts say Mitel missed its chance to secure the regional BOC's as distributors because the SX-2000 was delayed. Smith denies that. "We had an an opportunity to aggressively pursue them, and we

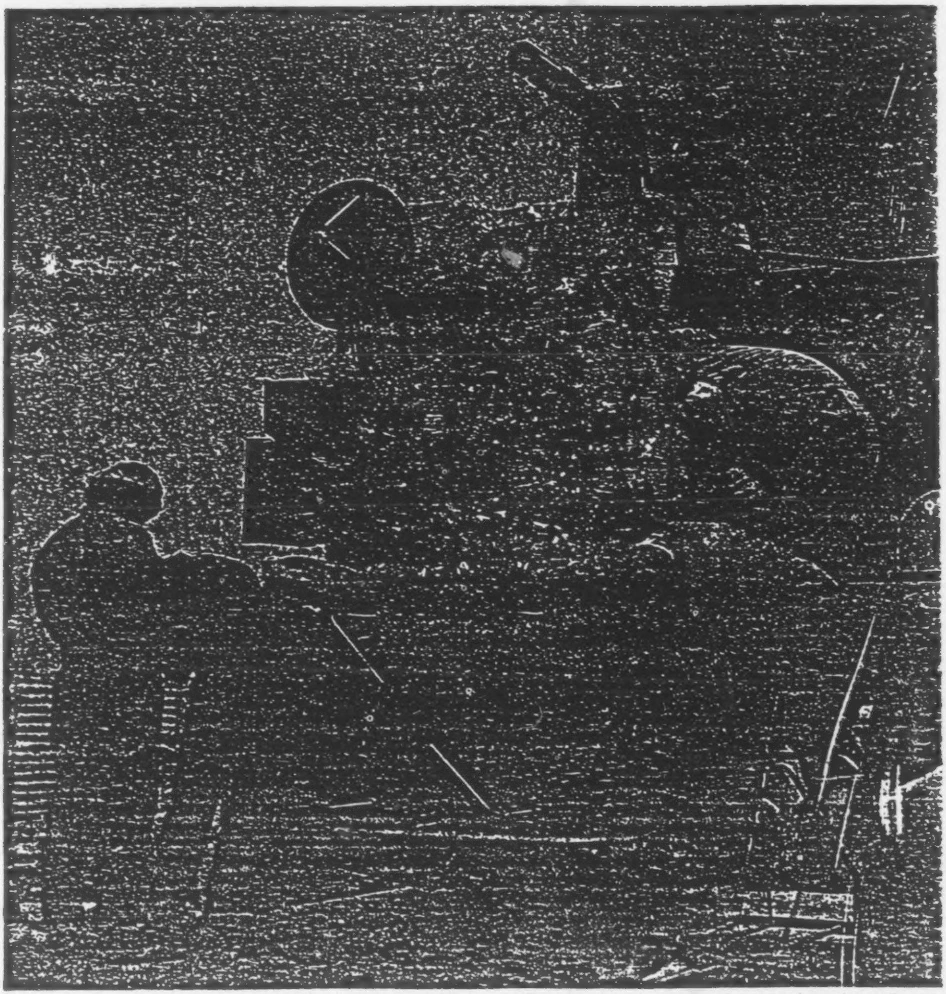
(Continued on Page C7)

PBX Suppliers To The BOCs

REGIONAL BELL OEPRATING CO.	DIVISION SELLING CPE (PBXs)	PBX MANUFACTURER	PBX
AMERITECH	Ameritech Communications, Inc.	·TIE/Comm. ·Ericsson ·NEC	Data Star Prodigy NEAX 2400
Bell Atlantic	Bell Atlanticom Systems Inc.	·TIE/Comm. ·NEC InteCom	Data Star NEAX 2400 IBX
BELLSOUTH	BellSouth Services	American Tel. ITT Northern Tel. InteCom	Focus 3100L SL-1,100 IBX
NYNEX	Business Information Systems, Inc.	·TIE/Comm. GTE InteCom	Data Star Omni IBX
PACIFIC TELESIS Group	Pac*Tel Communication Systems	·TIE/Comm. American Tel. Northern Tel.	Data Star Focus SL-1
Southwestern Bell Corporation	Southwestern Bell Telecommunications, Inc.	·American Tel. Northern Tel. InteCom	Focus SL-1,100 IBX
USWEST	Firstel Information Systems, Inc.	·TIE/Comm. ·NEC Ziel	Data Star NEAX 2400 PNX

CORPORATE PERFORMANCE

JAPAN'S TWO-FISTED



Wherever the cutting edge *of Japanese high technology slices, NEC likes to be. Here it is building the prototype of a marine observation satellite, one*

TELEPHONE MAKER

complicated in Japan's satellite program.

PHOTOGRAPH BY PHILIP JONES GRIFFITHS—MAGNUM

Though far smaller than either AT&T or IBM, hard-charging NEC Corp. thinks it's better than they are at tying computers to telecommunications equipment.

■ *by Lee Smith*

JAPAN'S NEC CORP. still bears traces of its beginnings as a clone of AT&T's manufacturing subsidiary, Western Electric. Its oldest plant in Tokyo is a replica, down to the woodwork, of Western Electric's antiquated Hawthorne Works near Chicago. Even their logos were similar for years. But NEC has managed to break out of the telephone supply business in ways that the newly deregulated Western Electric (now called AT&T Technologies) is still dreaming about.

NEC has become Japan's largest manufacturer of semiconductors, and third in the world behind Texas Instruments and Motorola. AT&T Technologies, by contrast, makes semiconductors mainly for its own use. NEC has taken command of at least part of Japan's flourishing personal computer market. And as data processing and telecommunications become ever more tightly intertwined, it is in an enviable position. "AT&T is very big in communications, but it doesn't have much experience selling computers," says NEC President Tadahiro Sekimoto, 57. "IBM, on the other hand, is very big in computers but not in communications." So though NEC's annual revenues of about $7 billion are small compared with IBM's $40 billion or AT&T's estimated $56 billion, NEC thinks it can stay in the ring with the giants because it's a two-handed fighter.

Much of NEC's muscle derives from its position in semiconductors, the basic cells of telecommunications equipment and computers. Making the semiconductors at home gives NEC control over the design of its machinery and also a cost advantage. Though NEC initially bombed in the U.S. with its higher-priced personal computer, it's about to try again, this time with a machine that will compete directly with the IBM PC but cost less. The deluxe model, which can store the equivalent of 3,500 single-spaced typewritten pages in its memory, will sell for just under $4,000, or about $1,500 less than a comparable IBM model.

NEC confidently expects its international business to grow rapidly through the rest of the decade. Five years ago sales outside Japan accounted for 26% of NEC's total. In the fiscal year that ended in March, international business had grown to 35%. In another five years, NEC anticipates, overseas sales will be 40% of the $18-billion total, assuming the company continues to expand at the 20% annual rate compounded of the past several years.

Turning NEC into a scrappy international competitor has been no easy job, for the company spent its early life as a coddled dependent of the Japanese government. Born in 1899 as Nippon Electric Co., it was a joint venture of Western Electric and two Japanese businessmen. In 1925 Western Electric, along with parent AT&T, decided to concentrate on the U.S. and sold its shares to ITT. At one time ITT owned most of NEC's shares, but when Harold Geneen took over ITT in 1959, ITT gradually reduced its interest, the last shares going in 1977.

NEC, now widely held by Japanese and foreign shareholders, makes telephone switching equipment, transmission lines, and similar paraphernalia for the government-owned phone company, Nippon Telegraph & Telephone. The comfortable relationship guarantees NEC a steady customer and also the fruits of NTT's generous research budget—$400 million in 1983.

FOR YEARS telephone equipment was about NEC's only business. But when Koji Kobayashi, who at 77 is still chairman, became president in 1964, he saw that NEC was drifting toward trouble. He realized that in a few years most of Japan would be plugged into the phone system and the company would have no place to grow. Kobayashi pushed NEC into overseas markets, first exporting broadcasting systems and later microwave stations. Microwave stations fit easily into most communications systems and sold briskly in places as disparate as Australia, India, and Mexico.

NEC got into computers in the 1950s, but in the mainframe business its performance has been less than exciting. It signed a pact

At a New York press conference *NEC unveils its cheaper version of the IBM PC.*

with Honeywell in 1962 to make mainframe computers in Japan based on Honeywell technology. Fujitsu and Hitachi elected to follow IBM, producing mainframes that run IBM software. The two Japanese companies so closely follow the IBM product line that Hitachi was caught stealing IBM secrets in 1982, and Fujitsu last year agreed to pay IBM compensation for having made software almost identical to that of the American company.

NEC's image has remained untarnished, and next year Honeywell will start to sell NEC mainframes under the Honeywell name in the U.S. and Europe. Still, in what is rapidly becoming an IBM world the distinction of emerging as a leader of the non-IBM gang could be as empty as being a prominent maker of, say, long-distance propeller planes.

Personal computers are another matter. The machines are unusually important in the Japanese office because they can cope with the thousands of characters of the written language that frustrate the conventional typewriter. The operator of a personal computer can play a keyboard of 50 or so phonetic symbols that then dig the appropriate characters out of the machine's memory. Seeing the potential, NEC plunged into the personal computer business full force in 1979, and has come to dominate the Japanese market for higher-priced machines. It has been turning out PCs at the rate of 40,000 a month and has captured almost half of Japan's PC market. More to the point, says Peter G. Wolff, an analyst for Prudential Bache Securities in Tokyo, "NEC is probably the only manufacturer in Japan making a profit in the personal computer business."

PRESIDENT SEKIMOTO gets much of the credit for the PC's success. Long before he rose to his current job in 1980, Sekimoto attracted NEC's best talent to his projects, whether for research work in the central lab or for putting together a budget in the transmission division. Noriyuki Naito, a former NEC executive who is now manager of the Boston Consulting Group's Tokyo office, says Sekimoto accomplished that partly by gravitational force. At 5 feet 9 inches, Sekimoto is tall for a Japanese of his generation, and his exuberance creates an energy field in his neighborhood. In conversation Sekimoto is always in motion, elaborating his arguments with broad hand gestures and quickly drawn sketches. He pulls off his loafers to dramatize an anecdote about the importance of not tracking dirt into a room where semiconductors are being made.

"Sekimoto might not be the best engineer in the company, but he is probably the best manager," says Naito. "Some managers are afraid to make mistakes, so they avoid decisions. Sekimoto is willing to make a decision and support it with all the resources he can get."

Some financial analysts cluck when they look at NEC's debt-laden balance sheet. To keep up with its rivals in high-tech businesses, NEC has had to invest heavily in new factories and equipment, $280 million last year in the semiconductor business alone. Hitachi invested $220 million and Fujitsu $230 million. NEC has borrowed liberally, a practice made easier by the Sumitomo Bank's being one of NEC's major shareholders, with 5% of the stock.

NEC doesn't necessarily get its loans more cheaply, but the knowledge that it has Japan's most profitable bank as a lender of last resort may well encourage its borrowing ways. Sumitomo, for instance, bailed out Mazda when the automaker hit heavy going in the 1970s. Only 30% of NEC's capital is equity, compared with 57% for Fujitsu and 58% for Hitachi. "Americans look at our balance sheet and say we're bankrupt," says Sekimoto a touch huffily. "They don't look at the assets we have in patents and people." He agrees, however, that it would be a good idea to get the equity share up. In February the company issued $270 million of new stock.

NEC's earnings have not been impressive. On fiscal 1983 earnings of $138 million, the return on equity was only 12% and return on sales 2.3%. Some outsiders wonder why it keeps pouring precious money into its home electronics business—TV sets, videotape recorders, and the like—which is scrawny alongside that of Matsushita Electric, maker of the National and Panasonic brands, and Hitachi. NEC doesn't seem to stand much chance of making a profit in those lines. Sekimoto answers that he doesn't regard TV sets simply as entertainment boxes, but also as monitors for systems through which homeowners will be able to scan supermarket sales, order airline tickets, and check on whether the back door is locked. The company wants a role in the home computer and communications business—C&C as it's known around NEC—as well as in factory and office C&C. Sekimoto's argument isn't altogether persuasive. NEC, the critics point out, can compete in C&C without making all the components itself.

Still, investors—about one-fifth of the shares are held by foreigners—are so enamored of NEC they would probably climb an electric fence to get at the stock. NEC has recently been selling at about 42 times earnings, vs. 16 for Hitachi and 25 for Fujitsu. The British securities firm Vickers da Costa

RESEARCH ASSOCIATE *Kate Ballen*

is betting that NEC's earnings will rise 23% a year for the next five years. Others have unlimited faith in NEC's distant future. "It's not a stock you buy for yourself," advises a Tokyo management consultant. "It's something you buy for your children and grandchildren."

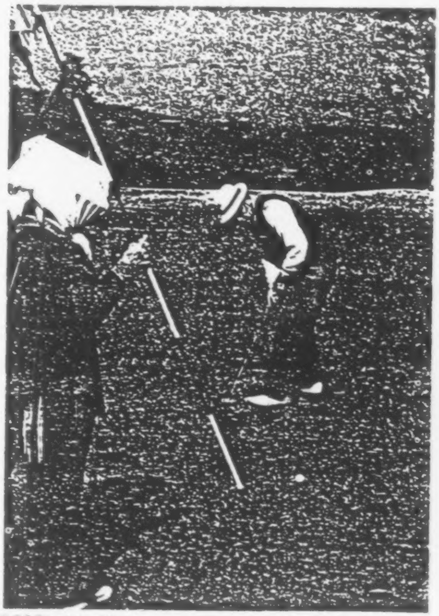
The prospects for generations yet unborn look bright. At home NEC seems assured of a growing market, although an increasingly complicated one. NTT, no longer as vital as it once was but still an important customer, is undergoing changes that on balance will probably be good for NEC. The company will be hurt by pressure the U.S. has brought on NTT to shop outside its little clique of NEC and ten or so other major suppliers. From Cray Research of Minneapolis the phone company has ordered a $12-million supercomputer; from AT&T it is getting $49 million in minicomputers. From Northern Telecom of Mississauga, Ontario, it will buy private branch exchanges, or PBXs, which it will resell to business customers. A modern PBX is an office phone system with a computerized routing mechanism that directs not only incoming voice calls to the right phone, but also data to a computer. Were it not for U.S. pressure, those contracts might have gone to NEC.

But after the decade or so of sluggish growth Kobayashi foresaw, NTT has started to overhaul Japan's communications network, providing a windfall of $7 billion a year of business for the next 15 years. NEC will almost certainly get a big slice. The phone company plans to spread a web of optical fibers over the country. Instead of being turned into electronic signals that are passed along copper wires, voices and data will be transformed into light pulses and sped through the fibers. Light pulses are less vulnerable than electronic transmissions to interference, and optical fiber systems are often cheaper. NEC doesn't make the fiber but produces the semiconductor lasers that transform the electronic signals into light and assembles the components into switches, transmission lines, and other systems.

NEC can also probably count on a hefty annual income from the military. The Japanese Defense Agency ordered $550 million of radar and other electronic gear in the last fiscal year. The agency is not likely to repeat a purchase that big soon. Still, the more the U.S. scolds Japan to increase its military spending, the happier NEC is likely to be.

Overseas semiconductor sales have been booming as they have for most producers. NEC sold $400 million of chips outside Japan last year. Business in the U.S. is so promising that in April NEC opened its second American semiconductor plant, in Roseville, California.

A few months ago the company announced that it had designed its own microprocessor, the device that pulls information out of a computer's memory and puts it to use. So far the news hasn't thrown Silicon



NEC President Sekimoto *golfs not far from Mount Fuji.*

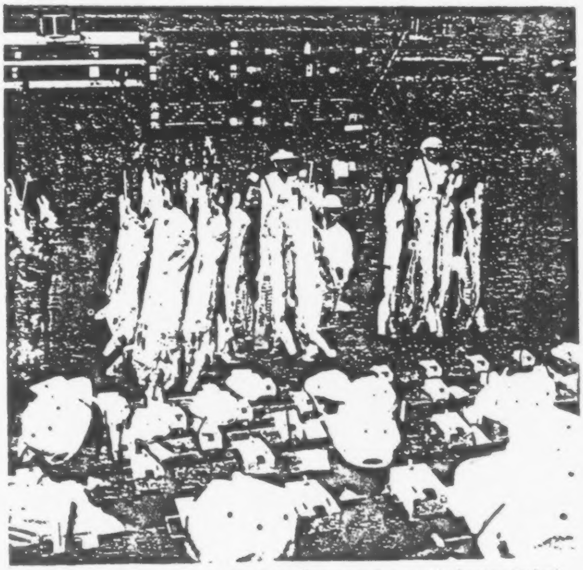
Some of his associates *settle for a rooftop in Tokyo.*

Valley into panic. That would happen only if a Hewlett-Packard, say, were to announce that it planned to build its next series of computers around a NEC microprocessor. What the announcement does signify, however, is that at least one Japanese company is no longer willing to concede U.S. dominance over a crucially important chunk of the semiconductor industry and is willing to invest in a risky and demanding business.

NEC's ambition includes taking a bigger bite out of AT&T's business. The breakup of AT&T in January means that NEC and other equipment manufacturers can sell to customers through the new regional phone companies, which are eager to have something on the shelf besides the wares turned out by AT&T Technologies. NEC has been exporting telecommunications equipment to the U.S. since the Sixties, and since 1978 has been manufacturing telephone equipment in Dallas. But it has only 5% of the $3.3-billion-a-year PBX business; AT&T has 24%. Customers, it seems, are leery of buying intricate phone equipment, which can cost $4 million for a 5,000-line system, from a company on the other side of the world, worrying that they might have to call Tokyo for service or spare parts. By selling through the regional Bell companies, NEC would help customers overcome those fears.

So far NEC has signed up five of the seven regional companies. The PBX equipment is good, and the price is right. "NEC is the Crazy Eddie of telecommunications," says Robert Fleming, an analyst for the Gartner Group, a Connecticut consulting firm. "It will not be undersold." He believes that by 1987 NEC will have 12% of an estimated $4.5 billion U.S. PBX market.

NEC is pinning many of its hopes for growth on the concept of the local area network, in which all of an office's electronic equipment is knit into a single system. In the NEC version of this growing office phenomenon, the personnel clerk at his work station can summon an employee's health record from the mainframe computer, add some information, and pass it all along to the personal computer on the desk of the employee's boss; the advertising director can send copies of a layout to five other departments simultaneously on a facsimile. NEC makes all of that equipment as well as the optical fiber to connect it. The competition in the local area network business is likely to be fierce, engaging, among others, Hitachi in Japan and Digital Equipment, Wang, and Xerox in the U.S. The rival that everyone worries about, IBM, surprised the industry in May by announcing that it would be two or three years before it would be able to deliver its full system. But a NEC senior vice president, Toshiro Kunihiro, 55, noted in IBM's announcement that the company will be ready to install the wiring for its future system this fall. "They want to tie up the customers now," Kunihiro observes dryly, "even though they don't have the machines to tie up yet."



NEC is talking up *its voice-activated computers. When an auctioneer at this Japanese wholesale meat market reads statistics into a microphone, written numbers appear on the electronic board*

AS TO THE FUTURE, NEC expects to have by the end of the century a commercial version of the ultimate communications gadget, the two-way Dick Tracy wristwatch with which the wearer can talk to anywhere in the world and also send and retrieve data. "But it won't be a wristwatch," says Michiyuki Uenohara, 57, director of research. It's not the technology that's limited; it's the human being. Eyes refuse to read videotext on anything as small as a wristwatch. Fingers are too clumsy to operate controls on it. So the device will likely be the size of a pocket calculator.

Uenohara is even more excited about the potential for translation machines that could convert written and spoken words from one language to another. As a preliminary step, NEC is working on a machine that can read a simple Japanese novel and render it into spoken Japanese. A more complicated instrument that can translate Japanese into foreign languages will have to have a huge vocabulary and a knowledge of grammar that will gobble up enormous quantities of the memory chips that NEC makes. Uenohara thinks that such a machine will be of great service to humanity as well as to the semiconductor industry. What a boon it would be if Japanese scientific papers and engineering manuals could be translated quickly and cheaply into the languages of the less developed countries of Asia and Africa and, although Uenohara forgot to mention them, of Europe and North America as well ■

THE INROADS JAPAN IS MAKING IN FIBER OPTICS

The furor over the escalating Japanese challenge to America's lead in chipmaking is obscuring the island nation's powerful push into fiber optics—a technology that could become just as important as chips. While U. S. chipmakers scream about the Japanese gnawing away 13% of their U. S. business, Japan's share of the embryonic U. S. fiber optics market has already reached that level—and is growing more rapidly.

Japan's aggressiveness stems from a national strategy to stake out fiber optics as a "sunrise" technology. The Japanese view it as the next semiconductor industry, and its development has top priority. "Now we are in the microelectronics age," says Mikio Ohtsuki, director of Fujitsu Ltd.'s Transmission Group. "Next comes the optical age."

For Japan, the U. S. is a particularly tempting plum since deregulation of the communications market this year has caused demand to soar. The primary use for fiber optics is long-distance communications, moving both phone conversations and computer data. As yet only a tiny fraction of this traffic moves over glass fibers. But "the fiber optics market is growing at a frenetic pace"—40% or more annually—says Paul Polishuk, president of Information Gatekeepers Inc., a Boston market researcher.

In two years, the U. S. will be laying an impressive 1.3 million mi. of optical fiber annually—five times that installed in 1983, predicts Northern Business Information Inc. And by 1990 the yearly total should hit 4.5 million mi. The actual distances covered are much shorter than these mileages because the fibers are bundled into cables that usually contain 8 to 48 strands of glass.

PRIVATE LINKS. While the phone companies still drive most of the growth, new common carriers and private systems are also springing up rapidly in the wake of the breakup of American Telephone & Telegraph Co. "Now that it's open season on communications, anybody can establish a system," notes John N. Kessler, president of Kessler Marketing Intelligence. Large companies, such as Sears, Roebuck & Co. and McDonnell Douglas Corp., are setting up their own private links. About 50 office buildings, most of them in New York and Miami, have been wired with fiber optics. Industrial parks and universities are putting in fiber local-area networks. And most major railroads are negotiating with companies that want to put optical fibers along their rights of way.

Japan has been preparing for the blossoming of this technology for almost a decade, assiduously cultivating a broad fiber-optics industry by sheltering and subsidizing domestic manufacturers. Its production capacity for optical fibers and related electronics gear is projected to shoot from about $200 million last year to $2 billion in 1990. That is far in excess of Japan's domestic needs. In fact, it should be almost enough capacity to satisfy the entire U. S. market.

"It looks like another classic case of what we find unacceptable about Japanese industrial policies," says a U. S. trade official engaged in negotiations with Japan. "They shut us out while they build an export launch pad, often using our patents and technology, then bombard us in our own and third markets." Michael K. Barnoski, a consultant who spent 10 years in the fiber optics divisions of Hughes Aircraft Co. and TRW Inc., warns that "if we don't get our act together, and fast, the Japanese are going to do to us in fiber optics what they've already done to us in autos."

Japanese companies are moving quickly to exploit the U. S. boom. To qualify under AT&T's buy-American policy and avoid a stiff 17% tariff, NEC Corp. has remodeled a Virginia plant to assemble fiber optics terminals and electronic components. Fujitsu recently opened a Dallas plant that turns out terminals and the repeaters that are needed every 10 to 20 mi. to regenerate and retransmit optical signals. And Sumitomo Elec-

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services as automatic translation of foreign-language calls, videophone, home facsimile machines, and two-way TV.

Some analysts question whether there will be enough demand for such services to justify the expense. Optimists counter that INS could be the basis for a $170 billion industry, including equipment and services, by the year 2000. "Once cheap transmission is available, it will create demand," declares Masahiro Hirano, planning director at the Engineering Research Assn. of Applied Optoelectronics Systems. "Ten years ago people wondered whether there was really a demand for all the memory capacity that semiconductor makers were manufacturing," he recalls. "Now we know: The more you have, the more you want."

The Japanese believe that fiber optics 'can make smokestack industries more competitive'

Created by Japan's Ministry of International Trade & Industry (MITI) in 1981, the optoelectronic association started with 11 corporate founders. Today more than 150 companies are members, and they have been a key force in putting fiber optics to use at 400 sites outside the NTT sphere: transporting video, voice, and computer data in factories and electric utility systems, keeping track of traffic flow on highways, and managing data transmissions on local networks in office buildings. The group pegs Japan's market for nontelephone fiber systems at $15.6 million in 1980 and $560 million in 1990.

DETECTING FLAWS. Now the Japanese are developing a system for automating factories. It will perform remote-sensing chores—measuring temperatures and pressures, detecting flaws through optical inspection, and gathering data on production trends. The objective, says Koichi Murakami, a MITI administrator, is to link a company's factories with headquarters so the manufacturing operations can be run from one central location. The Japanese, says Polishuk of Information Gatekeepers, believe fiber optics "can make smokestack industries more competitive."

The U.S. has no counterpart to the initiatives of MITI and NTT, not even a research cooperative—and that worries many Americans. "We can certainly match championship laboratory data," notes consultant Barnowski. What is unclear, he adds, is "whether we're capable of matching championship performance on the production line and in the field." ■

tric Industries Ltd., the No. 3 optical fiber producer after AT&T Technologies Inc. (formerly Western Electric) and Corning Glass Works, is building a $10 million research center in North Carolina. This center could become the hub of full-scale fiber production in the U.S. after Corning's basic patents expire in the early 1990s.

THE HARD SELL. Japanese companies are also stumping the globe, hawking optical systems for connecting a phone company's switching centers. They have won major jobs in Buenos Aires, Singapore, and Hong Kong. The Buenos Aires installation, perhaps the world's biggest municipal system, absorbed nearly 5,000 mi. of optical fibers from Sumitomo, as well as NEC electronics gear.

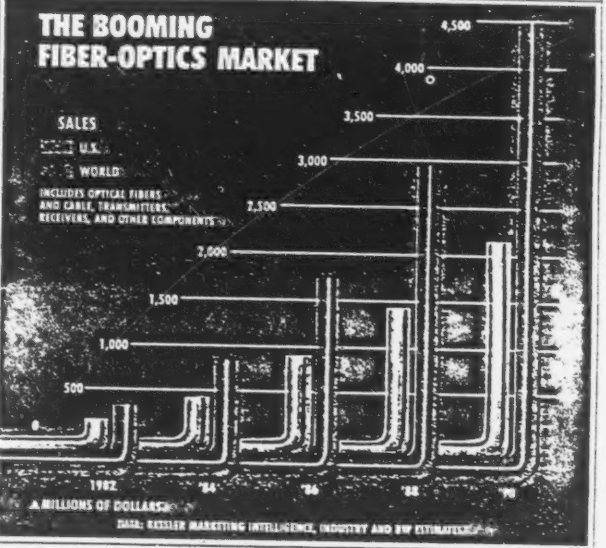
"The Japanese bought that job, plain and simple," says a U.S. competitor. Sumitomo's bid on the optical cables, he adds, was about half the bid of four other consortiums. Meanwhile, he adds, in Japan, Sumitomo sells optical cables to Nippon Telegraph & Telephone (NTT) for two to four times the world price. "If somebody subsidized me that way, I could sell low in Argentina, too."

NTT pays more for fiber, Sumitomo says, because it demands very high quality. A Sumitomo official asserts that "nobody in the U.S. sells optical fiber of the quality that NTT demands for its 400 megabit [million bits] system." David A Duke, general manager of Corning's Telecommunications Products Div., terms that claim "nonsense" and says that AT&T, Valtec, and Corning all make fibers capable of handling far in excess of that capacity. He admits, though, that NTT does demand a unique cable configuration that adds cost.

ISLAND LINKS. The Japanese inroads have been made in spite of the fact that they are not licensed to sell optical fibers in North America or Europe under Corning's basic patents. Yet NEC, Japan's strongest player, boasts that it alone has 10% of the American market. Its systems include Corning fiber plus imported electronic components that represent roughly half of a system's cost.

Fujitsu is supplying most of the electronics for MCI Communications Corp.'s $200 million, 400-megabit network. This system will consume 150,000 mi. of fibers from Corning and Northern Telecom Ltd. and run along 4,250 mi. of railroad tracks east of the Mississippi. MCI Vice-President Daniel Walters says his company could not buy high-speed terminals and repeaters from AT&T Technologies before this year, so Fujitsu's equipment was "all that was available."

Japanese executives are quick to point out that even AT&T builds some of its systems with Japanese semiconductor lasers, the devices that transmit light signals through the gossamer strands of glass. David G. Thomas, executive director of transmission systems development at AT&T Bell Laboratories Inc., admits that "one celebrated case is our TAT-8 [transatlantic telecommunications] cable, which is going to have a lot of Hitachi lasers in it." The 3,600-mi. cable will be laid over the next four years at a cost of roughly $400 million. Once the transatlantic cable goes into service in 1988 and proves the technology, everyone expects a furious market in linking the islands in the South Pacific and the Indian Ocean.



DATA: KESSLER MARKETING INTELLIGENCE, INDUSTRY AND BW ESTIMATES

Although Japan has seized the lead in today's semiconductor lasers and photodiodes—the receivers that pick up the light signal on the other end of an optical fiber—researchers at Bell Labs are confident that it is temporary. "What we're trying to do," says Lawrence K. Anderson, director of electronic components at Bell Labs, "is head off the Japanese with forward-looking, manufacturable technology—putting more emphasis on technology that is low-cost to manufacture. That's required a change in philosophy," he adds, "from the way that Bell Labs normally operates."

For example, while developing the repeaters for the TAT-8 submarine cable, Bell Labs created new integrated-circuit chips that eliminate several discrete components. "Our Japanese and European competitors have good devices," says Anderson, "but if you look inside, you'll see a rat's nest of hand-wired discrete components." The new chips, he adds, not only improve reliability but also reduce costs. "This year, as we ramp up to large-scale production, we're counting on the simple-but-adequate approach to compete effectively."

The engine powering Japan's thrust into fiber optics is NTT. To nurture an army of suppliers for sophisticated optics products, it conducts joint research with dozens of companies. Today, the communications giant spends roughly 7% of its annual $350 million research and development budget on optics-related work. The goal is to make Japan the first country with optical fibers connected to every home. NTT plans to spend an extraordinary $80 billion over the next 15 years to replace its entire "plant" and launched the first phase a year ago by starting to install a 1,800 mi. optical-fiber cable linking Sapporo in the north to Tokyo, Hiroshima, and Fukuoka. This cable is the backbone of the Information Network System (INS) that NTT intends to have in service by 1990.

Initially, each fiber in the cable will carry 400 million bits of data per second. Later, by adding faster lasers, the speed will be quadrupled to a phenomenal 1.6 billion bits per second. That is sufficient to transmit the entire *Encyclopedia Britannica* in two seconds. Consumer electronics companies such as Sharp Corp. and Matsushita Electrical Industrial Co. are now developing new equipment to harness the enormous capacity of the INS. NTT wants to offer such futuristic

Japan's telecom industry rushes into the information age

Thanks to careful planning and inter-company cooperation, Japanese telecom companies are expected to prosper in international and domestic markets

GENE GREGORY

IF TECHNOLOGY is the main engine of industrial and social change, the mounting wave of telecommunications innovations being introduced in Japan is destined to radically transform structures of economic activity and society as a whole during the remainder of the 20th Century.

The long awaited "information society" finally is emerging from the misty realm of dreams to tangible reality. The imminent privatization of Nippon Telegraph & Telephone Public Corp. (NTT), the launching of Japan's first operational communications satellite and the meteoric takeoff of optical fiber production are signals which suggest the shape of things to come.

Changes now underway will have effects on human institutions and behavior as profound as the inventions of printing, the telegraph and the telephone. Office, factory and home already are being transformed.

The effects of new communications already are apparent in the restructuring of old industries and the calling forth of new ones. Japanese copper refiners, which depend on telecommunications for at least 12% of their total turnover, are confronted with declining orders as traditional wire cable is replaced by optical fibers in a widening range of applications. Cable manufacturers, of necessity, are diversifying from copper wire into glass fiber production, and a new sector of optical fiber component manufacturers is emerging. As communications equipment shifts from the analog to digital mode and as software is increasingly built into systems' firmware, large integrated electronics companies are gaining increasing shares of the market.

A new division of labor is developing among the major communications equipment manufacturers and smaller manufacturers gravitating into their orbits. At the same time, a new breed of software entrepreneurs whose services are required for advanced communications network design is shaking up established patterns of industrial organization, much as Sony, Casio and Pioneer did by spurring the earlier rise of the consumer electronics industry.

Societal commitment

Japanese communications and information industry policymakers have been specifically and wholly committed to the development of information technologies and their societal underpinnings for well over a decade. As a result, microelectronic, computer and consumer electronics firms, along with their labor unions and bankers, are prepared for the incipient communications revolution. Leadership in very large scale integration (VLSI) technology, fifth generation computer development and optical fiber technology—with special emphasis on mass production and application—place the combined Japanese electronics industry in an appropriate posture to take full advantage of the successive waves of opportunity in the new telecommunications age.

The nucleus of this national information industry complex is the so-called "Denden Family" of approximately 30 major telecommunications equipment suppliers subjected to NTT's rigorous performance specifications and quality standards. Of course, these same firms also have been the most direct beneficiaries of selective technological advances emanating from NTT's original three research laboratories, and by its newest research laboratory.

No less important, these designated suppliers have a substantial, ready market for the products developed jointly within the Denden Family. Although NTT accounts for a steadily declining share of the market for telecommunications equipment—approximately 33% in 1982—its Yen 2.5 trillion annual procurement provides suppliers with substantial relief from the risks inherent in technological change and assures them of important scale and experience economies that serve them well in other markets. In private and export markets, the high performance specifica-

Continued on page 140

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tions imposed by NTT also become important elements of competitive power.

Despite political pressures from the United States and the projected privatization of NTT, there are likely to be few major changes in these arrangements. The Denden Family derives its strength and reason for being from the inherent nature of telecommunications systems and technology. Their development requires close cooperation at all stages.

Uniformity and systems compatibility are imperative prerequisites of all technologies and equipment. Continuing communications made possible through a finely-tuned cooperative relationship cannot be replaced by arms length, *ad hoc* supply contracts.

There is nothing which requires that all members of the family be Japanese companies, of course, but in the past Japanese companies have been the equipment manufacturers—the logical partners in assuring operation of telecommunications systems.

The mutual obligations of family membership are likely to be even more important in the developing fifth communications age than in previous eras. Based largely on these arrangements, NTT has developed plans for the total overhaul of the telecommunications system during the 20 years from 1981 to 2000. This massive effort to develop a nationwide integrated information network system (INS) entails replacement of all existing cables with fiber optics, digitalization of networks, expansion of data and facsimile services, introduction of new video services, replacement of all existing telephones and other terminals, and the addition of a variety of new terminals for home, office and factory.

The INS will unify all networks through fully digitalized systems, replacing separate systems for different modes of communications: telephone, telegraph, telex, facsimile, data. At the same time, the new integrated system will be equipped with enhanced capabilities to assure projected changes in services:

- From mainly voice to video-intensive transmission.
- From principally man-to-man to more machine-to-machine communications in which computers and automatic remote control systems are active participants.
- To high speed and broadband transmission to accommodate increasing amounts of information.
- To add communications processing functions such as temporary storage, media or size conversion, translation and retrieval of messages as well as computations.

Total cost of this system's revision, in terms of direct capital outlays for equipment, is estimated at Yen 20 to Yen 30 trillion, plus Yen 1.3 trillion annual depreciation, over the 20-year plan period. In addition to these outlays by NTT, which surpass its outlays since it was founded in 1952, derived demand generated by this system—for local networks, exchanges and terminals—is estimated by Nomura Securities to be as high as Yen 60 to Yen 70 trillion.

Given the rapid pace of technological change in the telecommunications industry, however, these estimates could well prove to be conservative. One need only to think back to 1978 to understand the difficulties inherent in such forecasts.

Rand Corp. telecommunications experts in 1978 predicted that 64K microprocessors would be perfected in the early 1980s and reach integration densities in excess of 100K by the latter part of the decade. And they were right, in part. But the timing was off by several years, and by the end of the decade devices will be available with many times the capacity of those forecast. This more rapid pace in large scale integration (LSI) and VLSI technology, in turn, speeds the process of change in telecommunications technologies.

Optical fiber usage has been especially sensitive to the availability of more advanced LSI devices. Sales of optical fiber communications systems in Japan are outstripping earlier forecasts and demand continues to exceed supply even at current relatively high prices. From total sales valued at Yen 70 billion in fiscal year 1981, Daiwa Securities estimates that they will rise to Yen 700 billion in 1985, reaching at least Yen 7 trillion in 1990. Although Yamaichi Research Institute projects a slower growth in the 1980s than the forecast by Daiwa Securities, even this more conservative view of the future foresees optical fiber communications-related sales of Yen 12 trillion by the year 2000.

By the end of next year, NTT will have completed installation of the first trunk line using the large-scale optical fiber communications system that has been undergoing commercial tests since 1982. By 1990, according to plan, the entire nationwide grid, including individual subscriber lines, will be converted to optical fiber cable and the transpacific optical communications system will be operating between Japan and Hawaii.

Other interests

Telecommunications carriers are by no means the only market for optical fiber manufacturers, of course. Major Japanese electrical power companies have been perfecting their own optical communications systems for monitoring and controlling power grids. Since optical fiber is unaffected by the magnetic field of high-tension cables, Tokyo Electric Power Co. began research on optical communications in 1974 and perfected cable featuring tensile strength 25 times greater than its conventional nylon-coated counterpart, improved heat resistivity and other properties making it possible to combine optical fiber with suspension wire in a unified construction. This fiber-reinforced plastic (FRP) cable was developed with Sumitomo Electric Industries, Furukawa Electric, Fujikura Cable and Hitachi Cable; all four companies currently are producing it for domestic and foreign markets.

Optical fiber communications systems also are being developed for railways, subway systems and expressways. The most elaborate of these new transportation control installations is the integrated digital communications system adopted by the Tozai Line of the Sapporo Municipal Bureau of Transportation. Combining facilities for telephone and announcement services, operation control, power control and sales data processing, this integrated system is expected to serve as a model for other transport systems throughout the country. Major segments of the system have been developed by cooperation between leading firms in the field: Nippon Electric Co. (NEC) and Sumitomo Electric Industries have perfected data transmission systems; Matsushita Communications and Fujikura Cable, image transmission systems; and Fujitsu and Furukawa Electric, power control networks. Private and municipal railways have begun introducing surveillance and control systems employing various combinations of the new optical fiber technologies.

Similarly, optical fiber communications have been adopted by the Hanshin Expressway Public Corp., for monitoring traffic flow and highway communications facilities.

In broadcasting, Nippon Hoso Kyokai (NHK) and private operators

Continued on page 145

are using optical fibers for their community antenna television (CATV) networks. NHK also is continuing research with Hitachi Cable to develop a multi-channel optical fiber system for very high frequency (VHF) telecasting. Videotex systems undergoing tests since 1979 have been based upon integrated optical fiber communications.

Other expanding uses of optical fibers include local area networks being established in commercial buildings, companies, universities and research institutes to meet the demand for multi-modal transmission, to link computers to peripherals and satellite earth stations to computer nodes. Manufacturers now are using optical fiber multiplex communications systems in cars, ships and elevators to control electrical equipment, engines and automatic systems.

To meet increasing demand, cable manufacturers have been doubling production annually, with the lead taken by the three firms—Sumitomo Electric Industries, Furukawa Electric and Fujikura Cable Works—which joined NTT in the cooperative research on the vapor phase axial disposition (VAD) method of optical fiber manufacturing. Because market demand has been running ahead of supply, NTT recently has decided to make its patents in this field available to three other large cable manufactures—Hitachi Cable, Dainichi-Nippon Cables and Showa Electric Wire & Cable—as well.

Although Hitachi Cable, Dainichi-Nippon Cables and Showa Electric Wire & Cable had developed their own optical fiber technology independently, the VAD method has proven to be most advantageous. Larger diameter cables and greater length are obtained in 10% of the production time needed for the most widely-used process, the modified chemical vapor disposition (MCVD) method developed by AT&T Bell Laboratories and Corning Glass in the United States. Hence, in the interest of uniformity and economics of production, NTT has licensed all major Japanese cable manufacturers with its technology.

As a result, at the outset of fiscal year 1983, optical fiber capacity rating of the big six cable manufacturers totaled 32,500 km monthly (see Table 1).

Both Nippon Sheet Glass and Mitsubishi, with their own production methods, also are producing smaller quantities of optical fibers.

Table 1

Manufacturer	Kilometers per /month
Sumitomo Electric Industries	10,000
Furukawa Electric	8,000
Fujikura Cable Works	8,000
Hitachi Cable	3,000
Dainichi-Nippon Cables	2,000
Showa Electric Wire & Cable	1,500
Total	32,500

Three distinguishing features mark the booming Japanese optical fiber industry. First, compared with other national optical fiber industries, the Japanese industry is much less concentrated. In fact, there are as many major optical fiber manufacturers in Japan as in the United States and Europe combined.

Second, each of the Japanese optical cable manufacturers have joined with communications and optical equipment manufacturers of their respective *keiretsu* (industrial or banking groups) in the development of optical fiber production, applications and marketing:

- Sumitomo Electric Industries is linked with NEC and Nippon Sheet Glass, all key Sumitomo Group companies.
- Furukawa Electric has close ties with Fujitsu, since both are members of the Furukawa and Dai-Ichi Kangyo Group.
- Fujikura Cable Works with Toshiba Corp. and Showa Electric Wire & Cable. Toshiba and Fujikura both have Mitsui Group connections.
- Hitachi Cable is a subsidiary of Hitachi, Ltd., and both have common links to the Sanwa Group.
- Dainichi-Nippon Cables, with strong Mitsubishi Group ties, works with Mitsubishi Electric.

These linkages not only assure the necessary financial resources for rapid development of optical fiber production, but also serve to speed the process of optical fiber technology diffusion throughout group companies which embrace many of the main fields of application.

Third, the technological commitment and strength of this basic industry of the information age is formidable. The top three optical fiber manufacturers have acquired MCVD licenses from Corning Glass and pioneered the development, along with NTT, of the VAD method. The other five producers all developed their own technology, and three of these have also been licensed to use the NTT's VAD process.

In fact, Hitachi Cable has developed two optical fiber production methods of its own. One of them, the soot deposition method, is similar to the VAD process and has almost all of the latter's advantages over the MCVD method. In addition, however, Hitachi Cable has jointly developed a single polarization monomode (SPM) fiber with Hitachi, Ltd., which permits light to travel straight down the axis of the fiber, reaching its destination before light which bounces down the cable, which is the usual method.

While tests on its wider application still are being conducted, this new fiber has found many non-communications applications in high precision optical fiber gyroscopes, blood flow meters, interferometers, magnetic or electric field measurement as well as connections between circuits. SPM-type communications using very high quality optical fiber measuring 10 microns or less in diameter are envisaged by NTT in a new public telephone service to be inaugurated in 1987 or 1988.

By then the impact of optical fiber communications already will be far reaching. Per channel costs of glass fiber transmission will be only a fraction of existing tariffs. Since higher information carrying capabilities make make possible transmission of all communications modes on the same circuit, costs will be further reduced through their integration.

Other developments

Lower service costs, broader transmission capabilities and the speed of communications also will be enhanced by improvements in microwave communications, satellite services and digital switching systems. Japan's first commercial communications satellite, Sakura 2, which went into service last June with 4000 telephone circuits, will be joined by a second satellite in 1987 carrying 6000 circuits and more advanced craft in the 1990s with as many as 200,000 circuits. Although limited to back-up emergency services at the outset, satellite transmission will be used as relay transmission lines working in conjunction with optical fiber cable systems on the ground to form a highly reliable dual network.

In addition to these communications carrier satellites, broadcasting satellites will provide improved services for existing public and private networks, as well as new cable television systems. A group of three companies—Marubeni Corp., the Chunichi Shimbun and Uny Co., (respectively, a trading company, a leading newspaper and a major supermarket chain)—are preparing to launch a combined pay and free cable television service for the Nagoya region using a communications satellite in 1985. By 1988, the third Japanese broadcasting satellite, the BS3, will be launched, joining the BS2.

More diversified communications services at lower costs are being matched by similar developments in terminals made possible through application of successive generations of LSI circuits and more advanced VLSI circuits. The result is a boom in telecommunications terminals for offices and homes which will gain momentum after 1985 when the INS becomes operational. New high definition television receivers with flat screens and multiple functions which will be fully digitalized, will replace existing models.

Data communications services will give added impetus to personal computer usage, speeding the convergence of television with computer terminals. All existing telephones and switchboards will be converted to digital models. Developments in mobile communications are opening new markets for automobile radio telephones, cordless telephones and, ultimately, fully portable telephones. That powerful sleeping giant, facsimile communications, finally is awakening to an era of general office and home usage.

Although the take-off of new television services and digital receivers is still a few years off, car telephone services, begun in 1979, had been extended to approximately 200 cities with more than 20,000 subscribers by mid-1983. More economical base station equipment and a compact, low cost mobile radio put into commercial use in 1982-83 are expected to give a new boost to domestic demand. Meanwhile, leading Japanese firms, especially NEC and Matsushita Communications Industrial, are preparing for the huge United States market, where 1 million to 1.5 million mobile units are expected to be installed in automobiles during the next 10 years. The Middle East and Western Europe also are focal points of Japanese export interest. Matsushita Communications already has established its position in the car telephone market of the United Arab Emirates and Kuwait, and Mitsubishi Electric has begun exports to Western Europe, with initial exports going to the promising Swedish market.

Portable radio promises to be an even brighter star in tomorrow's communications firmament. As many as 20 Japanese manufacturers are already in the market, which industry analysts estimate will be worth Yen 2.2 trillion annually by the end of the decade. A rush for portable, high performance radio sets was triggered by the Ministry of Posts and Telecommunications' action in 1983 to rewrite the national Telecommunications Law, giving increased access to radio waves by private citizens.

This growth in mobile communications has been overshadowed by burgeoning facsimile equipment sales. While new models were improved in both efficiency and quality, prices dropped precipitously during 1982 as a result of increasing miniaturization and the introduction of advanced microelectronic devices. The response was electrifying. Unit sales rose 77% in 1982, producing a 30% increase in sales revenues.

Output of facsimile equipment in fiscal year 1983 was expected to reach 350,000 sets, which would mean a total turnover for the industry of approximately Yen 180 billion. But estimates of future growth vary widely. The conservative forecasts of the Communications Industry Assn. of Japan (CIAJ), predicting output of Yen 257 billion in 1985, have been scrapped. A more sanguine view, held by EDP/Japan Report, estimates 1985 output at Yen 300 billion, rising to Yen 350 billion in 1986.

Evidence supporting the more optimistic outlook is convincing. The current boom in NTT mini-fax rentals, which has gained momentum steadily since introduction of the service in September 1981, will be further fueled in 1984 when Denden launches the new economical and compact Mini-fax 2 capable of transmitting an A4 copy within 3 minutes. By 1986, all major cities in Japan will be included in the public facsimile network, which then will be integrated with other communications networks in a single digitalized optical fiber system scheduled to be fully operational by 1990.

More than 25 companies are racing to develop new, high speed units, dual purpose fax-copying machines and combinations of fax with word processors, microfilm and optical character reading equipment, which are all calculated to increase the attractiveness of facsimile services to users.

With these and other improvements in the offing, the number of facsimile installations is expected to increase from 300,000 at the end of 1982 to 10 million in 1990. Since this estimate is based on an 80% saturation of the office equipment market and only a modest 10% penetration of the home market, the wide scope for further growth in the 1990s is expected to sustain the sizeable number of producers in the industry.

Exports will spur the internationalization of major facsimile equipment producers. Although overseas shipments rose only 7.6% in the first 7 months of 1983, total 1982 exports shot up 83% to approximately Yen 40 billion, representing a 68% increase in volume to 63,300 units. The higher increase in the value of exports, exceeding the increase in export volume, reflects the greater advantages of Japanese higher-speed terminals.

Significantly, the relatively high rate of exports, which amounted to almost 27% of total sales in 1982, has been sustained less by direct marketing abroad by Japanese firms than by United States and European OEM (original equipment manufacturer) purchases in Japan. These supply arrangements, as of 1982, are illustrated in Table 2.

By comparison, leading Japanese manufacturers are estimated to have shipped only 15,000 units to the United States and 5000 to 6000 units to Europe under their brand names.

Indications are that this pattern of supply will continue for the foreseeable future. With rapid improvements in production efficiency through the application of more automated mass production methods Japanese manufacturers have reduced unit prices by more than 26% since 1980. Technological innovations, especially in LSI design and applications, have not

Continued on page 148

Table 2

U.S.	Units	Europe	Units
Fujitsu to Burroughs	5000	Fujitsu to ITT Europe	3000
Murata to Burroughs	3000	Mitsubishi Electric to Siemens	2000
Oki Electric to Pitney-Bowes	7000	Ricoh to Kalle Infotec	2000
Toshiba to Pitney-Bowes	8000	Oki Electric to DeTeWe	2000
Hitachi to Southern Pacific Communications	2000	Oki Electric to Muirhead Corporation	2000
Hitachi to Telautograph	2000		

only brought miniaturization and higher quality, but also have lowered the costs of parts and components. Moreover, Japanese facsimile units now are equipped with levels of functionality unmatched by those produced in the United States and Europe.

As a result, in 1982 the British Post Office and the Swedish Telecommunications Agency (STA), for example, concluded contracts directly with Matsushita Graphic Communications for supply of mini-fax machines. Since the STA reportedly is planning to use Japanese mini-fax equipment in its nationwide communications network redevelopment program, Japanese facsimile exports to Sweden alone could amount ultimately to hundreds of thousands of units.

Spurred by this rise in exports of facsimile sets, overseas shipments of telecommunications equipment rose a spectacular 57.1% in 1981 and continued upward at a 21.7% rate in the first 7 months of 1983. Prospects are that, just as exports have led the growth of other electronic industry sectors in the past, the growth in the Japanese communications industry during the 1980s will be spurred by overseas sales. By 1986, exports are expected to account for approximately 30% of total telecommunications equipment shipments.

Market targets

At the same time, Japanese equipment manufacturers will move toward increasing manufacture of major products in key foreign markets. NEC, Fujitsu and Oki have begun to manufacture PABXs (private automatic branch exchanges) in the United States, and Fujitsu has plans for United States production of optical fiber communications-related equipment, the fiber excepted, in conjunction with an order from MCI Communications for installation of a long distance optical fiber communications system between Washington and New York.

Parallel to the rise in exports, private demand for communications equipment in Japan will continue to grow faster than purchases of NTT, Kokusai Denshin Denwa Co. Ltd. (KDD) and other public sector users. In 1986, equipment sales to the private sector are expected to exceed Yen 697 billion, estimated at 35.5% of total production, or about the same as the 35.6% taken by sales to public communications systems operators.

Further liberalization of the market for telephones and interconnect regulations for value-added networks will have a significant impact on the market for new generations of terminal equipment. Not only will an increasing share of home telecommunications equipment be sold by the manufacturer to the consumer through a variety of retail outlets, but customer-premises sales of digital exchanges, key telephone systems and local area networks will grow rapidly.

Radical changes in technology, combined with changing patterns of demand are transforming the structure of the telecommunications equipment industry. With the development of optical fiber communications, cooperation between cable manufacturers and equipment manufacturers is becoming even closer than it was in the age of copper wire. Satellite communications, a macro-technology susceptible to management only by large-scale enterprises, will increase the share of major equipment manufacturers in transmission equipment markets. Similarly, digital exchanges, like mainframe computers, have high levels of minimum efficient scale of production and, therefore, are likely to add to the power of major manufacturers in the marketplace.

Small and medium-sized telecommunications equipment manufacturers will lose market share for cable, transmission equipment and exchanges to the larger diversified communications companies, on the one hand; on the other hand, they will be faced by rising competition for terminal markets from consumer electronics and office equipment manufacturers.

Virtually all major appliance manufacturers and office equipment manufacturers have diversified into telecommunications terminal production in recent years and are likely to be leading suppliers of personal computer—or data communications—terminals and facsimile equipment, as well as television and other video equipment connected to the communications network.

Indeed, the advantage of appliance manufacturers is so strong that major communications equipment firms, such as NEC, are investing heavily in consumer electronics production to acquire the mass production capabilities that will be required to compete effectively in the terminal markets of tomorrow.

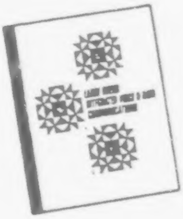
Trepidation

Quite understandably, foreign communications equipment suppliers view this trend with mixed feelings. While some specialized communications equipment manufacturers are confident they will be able to compete more effectively in the Japanese market after privatization of NTT and with the growing importance of the private sector, others are less optimistic.

Just as improved technology, higher domestic performance specifications and quality standards, and superior mass production capabilities are serving to make Japanese communications equipment increasingly attractive abroad, foreign suppliers will have to compete with this combination of advantages in the Japanese domestic market. Private buyers tend to be just as concerned with performance and quality as the public services, and they are even more impervious to international political pressures.

But that is not all. "There is the classic problem of interface between foreign manufacturers and the Japanese market that must be solved," a Tokyo representative of one leading international equipment manufacturer confessed. "The home office blames the Japanese and the branch office for failure to penetrate the mar-

Continued on page 150



The results of the 1984 survey of large users shows better than 70% of corporate users will have integrated voice-data communications departments by 1986. Accompanying that integration is the authority to integrate voice and data facilities, with markedly increasnd plans for digital termination (bypass) facilities and purchases of voice-data PBXs.

Over 30 key system and PBX manufacturers and over 50 modem, multiplexer and data switch manufacturers were named by the telecom professionals as coming to mind when considering purchases. But, manufacturers need to be cautious, since sector usage levels and demands vary.

The large user is making distribution channels as important as the equipment manufacturer. The integration of voice and data communications also is increasing the degree of centralized buying. The surveyed corporations' HQ telecom staff control 31% to 83% of voice and data communications acquisitions in locations ranging from 1-9 employees on up to over 1000 employees, underscoring emphasis on network compatability, and backup service, which past surveys have shown as the most important factor in purchase decisions.

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ket, but is not prepared to do the homework or modify the equipment to meet NTT standards. "We have to face the facts," he continued. "NTT standards are tighter, and in other ways special, but they are not going to relax them simply to please or accommodate foreign suppliers."

The plain truth of the matter is that, for many of these firms, meeting Japanese (not only NTT) specifications at competitive prices and normal business risks is not feasible. The volume of sales, under the best of all possible conditions, often does not warrant the investment.

But there are signs that the market is changing for some foreign suppliers. NTT has established technological ties with both International Business Machines Corp. (IBM) and American Telephone & Telegraph Co. (AT&T) which should facilitate the development of compatible systems and equipment, thus enabling these top American companies eventually to share in the Japanese market for the big ticket items which are their strengths. Motorola has been selected as a designated supplier, not only for pocket paging systems, but also for cellular telephones. Rolm has received NTT approval of its digital PABXs and private firms have been buying Rolm computerized branch exchanges (CBXs), which first appeared on the Japanese market as recently as April 1982. Fortified with this success, the company is resolved to capture 3% to 4% of the market for this type of equipment.

As a harbinger of things to come, last October Ichio Kato, NTT's director of international procurement, announced in Washington the placement of orders for an advanced traffic observation and management information collecting system from AT&T International, a $21 million supercomputer system from Cray Research, and a $4.3 million transportable digital switching system from Northern Telecom. Although sales of American firms to NTT have been doubling every year since 1981, when the agreement between the United States and Japan was signed giving American firms the right to compete on equal terms for NTT procurements, this was the largest set of U.S. equipment purchases to date.

By current industrial standards, the pace of NTT's liberalization signals a major change in policy, a change which is further reflected in the new open tender system of procurement. To expect radical changes in patterns of supply, even if the quality and prices of products are competitive with those being used, flies in the face of the reality of telecommunications systems' imperatives.

All products must be compatible with the total system and with its various components, which usually means that individual products must be designed for the needs of the system if optimal results are to be obtained. This limits the number of equipment items that can be bought off the shelf and requires rather lengthy lead time between the design stage, the placement of orders and final delivery.

The question suppliers are asking now is: Will NTT continue on its present course of liberalization after it becomes a private corporation?

Although NTT will not be legally bound to comply with the procurement agreement once its status as a public corporation is withdrawn, there are good reasons to expect that purchases abroad will continue to increase. As an executive of one American equipment supplier put it: "The important thing is that recent changes in the climate induce foreign firms to try harder."

But, equally important, NTT will no doubt remain committed to the path of cooperation it has taken with its recent technical relationships abroad.

There are also some sound technical and economic reasons for an increasing specialization and international division of labor as telecommunications technologies and products proliferate. As uniformity in global communications systems becomes increasingly important, there is likely to be a growing trend towards standardization and compatibility of systems and equipment. Closer cooperation between communications utilities and suppliers throughout the world, therefore, becomes one of the positive features of the fifth communications age.

Liberalization of communications systems the world over also will enhance the importance of private sector markets and increase world trade in communications equipment. Although Japanese telecommunications equipment manufacturers will be major competitors in this new global environment, effective competition in this field often requires international cooperation.

Increased international competition and cooperation thus become the logical pattern for members of the communications industry in the information age. □

PAGE 01 OF 02 BRUSSE 07536 00 OF 03 071750Z 5803
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E.O. 12356: N/A
TAGS: ETRD, EIND, TNGD, EEC, KSCA
SUBJECT: EC COMMISSION TELECOMMUNICATIONS INITIATIVE

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1. SUMMARY. THE EC COMMISSION HAS APPROVED A NEW TELECOMMUNICATIONS INITIATIVE WHICH HAS BEEN SUBMITTED TO THE COUNCIL OF MINISTERS. THE PROPOSAL CONSISTS OF AN ANALYSIS OF THE ECONOMIC IMPORTANCE OF THE SECTOR AND AN ACTION PROGRAM FOR THE CREATION AND STIMULATION OF A COMMUNITY-WIDE MARKET FOR TELECOMMUNICATIONS. HOWEVER, THE PROPOSAL CONTAINS NO RECOMMENDATION AS TO HOW THIS GOAL IS TO BE ACHIEVED. END SUMMARY.

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2. FOLLOWING EARLIER STATEMENTS ON TELECOMMUNICATIONS AT STUTTGART AND ATHENS AND FURTHER ANALYSIS OF OBJECTIVES AND STRATEGY, THE COMMISSION HAS APPROVED A NEW TELECOMMUNICATIONS INITIATIVE FOR SUBMISSION TO THE COUNCIL AS THE THIRD AND FINAL PART OF THE COMMUNITY'S HIGH-TECH PROGRAM CONSISTING OF ESPRIT, BIOTECHNOLOGY AND TELECOMMUNICATIONS. THE MAIN ORIENTATION OF THE INITIATIVE IS POLICY PLANNING AND COORDINATION RATHER THAN RESEARCH AND DEVELOPMENT, FOR WHICH ONLY A MODEST BUDGET HAS BEEN PROPOSED FOR ESSENTIAL COMMUNICATION AND RELATED NEEDS.

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3. THE COMMISSION'S ANALYSIS OF THE PROBLEM AMPLIFIES THE POINTS MADE MOST RECENTLY AT ATHENS, NAMELY, THAT TELECOMMUNICATION EQUIPMENT AND SERVICES WILL BE THE COMMUNITY'S LARGEST BUSINESS IN THE NEXT TEN YEARS, DECISIONS DUE SHORTLY WILL BE CRITICAL IN DETERMINING WHETHER THE COMMUNITY WILL HAVE THE TELECOMMUNICATIONS INFRASTRUCTURE TO REMAIN COMPETITIVE AND INDEPENDENT, AND THE COMMISSION HAS A LEADING ROLE TO PLAY IN THESE DECISIONS. IN BRIEF, THE KEY ISSUES PINPOINTED IN THE COMMISSION'S ANALYSIS ARE:

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-- INADEQUACY OF THE MARKETS;

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-- VOLUME OF INVESTMENT REQUIRED, PARTICULARLY IN THE COMMUNITY'S MORE DISADVANTAGED REGIONS;

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-- TECHNOLOGICAL FRAGILITY; AND

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-- STRATEGIC UNCERTAINTY.

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4. THE COMMISSION'S PROPOSED ACTION PROGRAM ADDRESSES THESE ISSUES WITH THREE OBJECTIVES:

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-- TO PROVIDE USERS, AS QUICKLY AND ECONOMICALLY AS POSSIBLE, WITH THE EQUIPMENT AND SERVICES NECESSARY TO ENSURE AN ADEQUATE LEVEL OF COMPETITIVENESS;

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-- TO STIMULATE EUROPEAN PRODUCTION OF TELECOMMUNICATIONS EQUIPMENT AND SERVICES SO AS TO CREATE THE CONDITIONS IN WHICH THE COMMUNITY TELECOMMUNICATIONS INDUSTRY CAN KEEP ITS STRONG PLACE IN THE EUROPEAN MARKET AND MAINTAIN ITS POSITION AS THE WORLD'S LEADING EXPORTER; AND

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-- TO ENABLE CARRIERS TO MEET THE COMING TECHNOLOGICAL AND INDUSTRIAL CHALLENGES IN THE BEST CONDITIONS AND AT THE LEAST RISK.

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5. SPECIFIC MEASURES PROPOSED TO ATTAIN THESE OBJECTIVES CAN BE GROUPED INTO FOUR MAIN CATEGORIES:

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A. CREATION AND STIMULATION OF A COMMUNITY TELECOMMUNICATIONS MARKET: THE OBJECT IS TO CREATE A COMMUNITY MARKET IN TERMINALS, THROUGH ACTION ON STANDARDS AND CONFORMITY PROCEDURES, AND TO PROGRESSIVELY OPEN THE MARKET FOR NETWORK COMPONENTS. THE COMMISSION WILL BE ASSISTED BY A CONSULTATIVE LIAISON GROUP IN CARRYING OUT THE FOLLOWING TASKS:

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- - 1) STANDARDS: IDENTIFYING THE SPECIFIC NEEDS OF THE COMMUNITY, AND DRAWING UP A COMMUNITY STANDARDIZATION PROGRAM, IDENTIFYING THE PRIORITIES AND ESTABLISHING A TIMETABLE. AN INITIAL PROGRAM SHOULD BE DRAWN UP BY THE END OF 1984.

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- - 2) CONFORMITY OF TERMINALS: CARRIERS WILL BE ASKED TO TAKE THE REQUISITE MEASURES LEADING PROGRESSIVELY TO MUTUAL RECOGNITION OF CONFORMITY CERTIFICATES, BEGINNING WITH THE MUTUAL RECOGNITION OF THE RESULTS OF TESTING BY RECOGNIZED NATIONAL LABORATORIES, FOR CONFORMITY WITH STANDARDS. THE TECHNICAL WORK REQUIRED UNDER THIS PROGRAM ON STANDARDS AND CONFORMITY WILL BE CARRIED OUT BY THE EUROPEAN CONFERENCE OF POSTAL AND TELECOMMUNICATIONS ADMINISTRATIONS (CEPT) UNDER AN ARRANGEMENT TO BE AGREED.

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- - 3) CARRIERS: MARKETS FOR NETWORK OPERATION SHOULD BE PROGRESSIVELY OPENED. AS REGARDS THE PROCUREMENT OF TERMINALS, CARRIERS WILL EXTEND CALLS FOR TENDER TO COVER ALL MEMBER STATES; AND FOR OTHER EQUIPMENT REQUIRED BY CARRIERS, THE COMMUNITY PROPOSES A PROGRESSIVE OPENING OF THE MARKETS, BEGINNING WITH A CERTAIN PERCENTAGE (E.G., 10 PERCENT OF CARRIERS' ANNUAL EXPENDITURE ON EQUIPMENT) WHICH COULD BE INCREASED AS THE OVERALL COMMUNITY PROGRAM IS IMPLEMENTED.

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- B. REDUCTION OF UNCERTAINTY CONCERNING DEVELOPMENT STRATEGIES THROUGH THE CREATION OF A FRAMEWORK FOR CONSULTATION AND CONCERTATION OF THE DEVELOPMENT OF SERVICES AND NETWORKS, AND THE IMPLEMENTATION OF JOINT INFRASTRUCTURE PROJECTS. THIS FRAMEWORK WILL BE CONSTITUTED BY A MULTIDISCIPLINARY GROUP FOR ANALYSIS AND FORECASTING, WHOSE WORK WILL INITIALLY COVER THREE AREAS:

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- - - THE DEVELOPMENT OF NEW SERVICES THROUGH THE RAPID INTRODUCTION OF INTEGRATED SERVICE DIGITAL NETWORKS (NARROW-BAND ISDNS);

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- - - THE ESTABLISHMENT OF CELLULAR RADIO-TELEPHONE SERVICES;

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- - - THE DEVELOPMENT OF VIDEOCOMMUNICATIONS AND THE IMPLEMENTATION OF WIDE-BAND TRANSNATIONAL NETWORKS.

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WORK ON THE FIRST AREA WILL BE COVERED IN A REPORT ON 31 DECEMBER, 1984 AND ON THE OTHER TWO AREAS IN A REPORT ON 30 JUNE, 1985.

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- C. IMPROVED TECHNOLOGICAL CAPACITY THROUGH A COLLABORATIVE PROGRAM OF INDUSTRIAL R&D, NOW UNDER PREPARATION, WHICH WILL BE PUT TO THE COUNCIL IN THE SECOND HALF.

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- D. AID FOR THE MODERNIZATION AND UPGRADING OF NETWORKS IN THE COMMUNITY'S LEAST ADVANTAGED REGIONS BY INCREASING THE PROPORTION OF FINANCING FOR TELECOMMUNICATIONS IN THESE REGIONS FROM COMMUNITY FINANCIAL INSTRUMENTS (REGIONAL FUND, EIB, NEW COMMUNITY LENDING INSTRUMENT).

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6. THE COMMISSION WILL BE ASSISTED IN THE IMPLEMENTATION OF THE OVERALL PROGRAM BY THE CONSULTATIVE SENIOR OFFICIALS GROUP, SET UP WITH THE AGREEMENT OF THE COUNCIL IN NOVEMBER 1983 TO PREPARE THE PROGRAM. THE COMMISSION WILL ASK THE COUNCIL TO RENEW THE MANDATE OF THIS GROUP.

7. COMMENT: THE COMMISSION'S PROPOSAL, LAUNCHED BY A PRESS HANDOUT, IS VERY SHORT ON NEW IDEAS. THE PROPOSAL DRAWS HEAVILY ON THE COMMISSION'S 1980 INITIATIVE IN TELECOMMUNICATIONS ("THE NEW INFORMATION TECHNOLOGIES--A COMMUNITY RESPONSE" COM (80) 422). HOWEVER, IT OMITS THE CONTROVERSIAL PROPOSAL FOR OPENING UP 10 PERCENT OF PUBLIC PROCUREMENT TO CROSS-BORDER TRADE. THE NEW DOCUMENT SAYS ONLY THAT THE COMMISSION "INTENDS TO SUBMIT TO THE COUNCIL A NEW VERSION OF THAT IDEA." SIMILARLY, IN THE SECTION ENTITLED "... COMMON ACTION ON RESEARCH AND DEVELOPMENT", THE COMMISSION SAYS IT WILL SUBMIT A PROPOSAL FOR AN R&D PROGRAM FOR TELECOMMUNICATIONS IN THE SECOND HALF OF 1984. IN SHORT, IN A FORTY-ONE PAGE PAPER, THE COMMISSION HAS PUT FORWARD NO CONCRETE PROPOSALS FOR THE SECTOR OTHER THAN THE FORMATION OF ADVISORY COMMITTEES TO STUDY THE PROBLEM. WHEN ONE CONSIDERS THAT DAVIGNON HAS HAD A "TASK FORCE" WORKING ON THIS ISSUE SINCE EARLY 1981, IT BECOMES CLEAR HOW DEEPLY DIVIDED THE COMMISSION AND THE MEMBER STATES ARE ON THE FORMATION OF TELECOMMUNICATIONS POLICY. END COMMENT.

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8. SOME EC COMMISSION OFFICIALS ARE OPENLY CRITICAL OF THE PROPOSAL NOT ONLY BECAUSE OF ITS LACK OF NEW IDEAS BUT ALSO BECAUSE OF PITFALLS THEY PERCEIVE IN THE APPROACH ITSELF. ONE COMMENTED THAT THE TEN PERCENT GOAL FOR PUBLIC PROCUREMENT IS AN ALMOST IMPOSSIBLE TASK GIVEN THE POSITIONS TAKEN BY THE MEMBER STATES. NEVERTHELESS, HE SAID, EVEN IF THE TEN PERCENT WERE ACHIEVED, THE GOAL WOULD THEN BE TO INCREASE THE SHARE TO TWENTY, THIRTY OR FOURTY PERCENT. OUR SOURCE SAID THAT THE COMMISSION MAY FIND THAT OBTAINING TEN PERCENT SIMPLY INCREASES RATHER THAN DIMINISHES MEMBER STATE OPPOSITION TO LIBERALIZATION.

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9. COPIES OF THE COMMISSION'S PROPOSAL WILL BE POUCHED TO THE DEPARTMENT FOR EB AND OES, USTR, FOR RALPH JOHNSON AND COMMERCE FOR LAMORIELLO. VEST

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UNCLAS SECTION 01 OF 02 PARIS 14356

E.O. 12356: N/A
TAGS: ETEL, ETRD, FR
SUBJECT: FRENCH PTT MINISTER'S VIEWS OF EUROPEAN TELECOMMUNICATIONS POLICY

1. IN LONG, ALMOST FULL-PAGE ARTICLE PUBLISHED IN "LE MONDE" APRIL 3, FRENCH POSTS AND TELECOMMUNICATIONS (PTT) MINISTER, LOUIS MEXANDEAU, SET FORTH FRENCH VIEWS ON A EUROPEAN TELECOMMUNICATIONS POLICY. WE ARE PROVIDING BELOW SOME EXCERPTS OF MINISTER MEXANDEAU'S ARTICLE WHICH WE CONSIDER IMPORTANT BECAUSE OF HIS LEADING POSITION ON THIS QUESTION IN THE FRENCH GOVERNMENT. WE WILL ALSO POUCH A TRANSLATION OF THE FULL TEXT TO DEPT (EB/TT/TD) AND USDOC.

2. EXCERPTS FOLLOW:

THE BACKGROUND

-- SINCE THE FOUNDING OF THE EC ONLY TWO TOP TECHNOLOGY INDUSTRIES, AERONAUTICS AND AERO-SPACE, HAVE EMERGED IN EUROPE. OTHERS LIKE NUCLEAR POWER AND INFORMATICS HAVE PRODUCED SOME EUROPEAN PROJECTS BUT HAVE MOSTLY REMAINED NATIONAL IN SCOPE. TELECOMMUNICATIONS, HOWEVER, HAS NEVER BEEN EUROPEANIZED.

-- A STANDARDIZED NORTH AMERICAN SYSTEM OF COMMUNICATIONS HAS EXISTED FOR A LONG TIME. IF NOTHING IS DONE TO PREVENT ITS FURTHER EXPANSION, EACH EUROPEAN COUNTRY, ON ITS OWN, RISKS BEING SWALLOWED UP INTO A WORLD-WIDE SYSTEM.

-- EUROPEAN STATES AND FIRMS BASE THEIR (COMMUNICATIONS) DECISIONS ON EITHER NATIONAL OR WORLD-WIDE CONSIDERATIONS. NATIVE PRODUCERS (PHILIPPS, SIEMAN'S, ETC.) HAVEN'T COOPERATED ON INTER-EUROPEAN PROJECTS; US FIRMS IN EUROPE (IBM ITT ETC.) DON'T PRODUCE EQUIPMENT SPECIFICALLY FOR EUROPEAN NEEDS. IF THIS TREND DOESN'T CHANGE, AND IT APPEARS TO BE ACCELERATING, (E.G., US/EUROPEAN FIRM COOPERATION--PHILIPPS/ATT, OLIVETTI/ATT) THE OPPORTUNITY FOR A EUROPEAN TELECOMMUNICATIONS INDUSTRY COULD BE DESTROYED.

-- CONFRONTED BY THE UNDESIRABLE SITUATION NOTED ABOVE, THE FRENCH GOVERNMENT HAS DECIDED TO REACT AND TO WORK TOWARDS THE CREATION OF A EUROPEAN TELECOMMUNICATIONS AREA (ESPACE EUROPEEN DES TELECOMMUNICATIONS).

-- FOR WHOM WILL THIS BE CREATED? FIRST, FOR THE CONSUMERS TO DEVELOP NEW SERVICES; SECOND, FOR THE MANUFACTURERS TO PROVIDE A SOLID, EUROPEAN MARKET BASE TO HELP THEM FINANCE THE ENORMOUS INVESTMENTS NEEDED TO ALLOW THEM TO COMPETE FOR WORLD MARKETS WITH US AND JAPANESE FIRMS; FINALLY, FOR THE EUROPEAN COMMUNITY AS A WHOLE SINCE MASTERY OF ELECTRONICS IS ONE OF THE MAJOR FACTORS OF ECONOMIC, INDUSTRIAL AND SOCIAL DEVELOPMENT.

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-- SHOULD FRANCE FEAR OPENING ITS BORDERS TO ALL OF EUROPE? "I DON'T THINK SO," THE MINISTER SAID. FRANCE ALREADY IS AMONG THE LEADING COUNTRIES IN TELEPHONE, TELEMATIC AND ELECTRONICS EXPORTS.

3. THE PLAN - FIRST STEP - JOINT STANDARDS AND PROJECTS:

-- OUR POSITION STARTS FROM A KNOWN FACT AND IS BASED ON TWO COURSES OF ACTION; THE FACT--A EUROPEAN TELECOMMUNICATIONS SYSTEM WILL NOT BE ESTABLISHED BY ITSELF BUT ONLY BY THE JOINT WILL OF THE MANUFACTURERS AND THE OPERATORS OF THE PUBLIC NETWORKS. THE COOPERATION OF THESE TWO IS INDISPENSABLE.

-- THE FIRST COURSE OF ACTION: THE EUROPEAN TELECOMMUNICATIONS SYSTEM MUST BE OF BENEFIT TO ALL, MANUFACTURERS AND CONSUMERS; FOR THE LATTER, THE EUROPEAN TELECOMMUNICATIONS MARKET MUST BE AN OPEN ONE.

-- THE SECOND COURSE OF ACTION: THE EUROPEAN TELECOMMUNICATIONS SYSTEM MUST RESULT IN THE ESTABLISHMENT OF A EUROPEAN INDUSTRY, NOT ONLY A TELECOMMUNICATIONS INDUSTRY BUT ALSO A COMPLETE ELECTRONICS NETWORK INCLUDING TELECOMMUNICATIONS, OFFICE DATA PROCESSING (BUREAUTIQUE), INFORMATICS, AUDIO-VISUAL SERVICES AND COMPUTER-DATA SYSTEMS.

4. THE PLAN - SECOND STEP - RECIPROCAL MARKET ACCESS:

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UNCLAS SECTION 02 OF 02 PARIS 14356

E.O. 12356: N/A
TAGS: ETEL, ETRD, FR
SUBJECT: FRENCH PTT MINISTER'S VIEWS OF EUROPEAN

-- THE FRENCH PROPOSAL TO LINK EC CAPITALS BY A TELECONFERENCING, FIBRE-OPTIC NETWORK PROPOSED TO EC STATES BY INDUSTRY MINISTER FABIUS IS NOTED.

-- THE GERMAN/FRENCH CELLULAR RADIO PROJECT IS CITED.

-- WITH ITS NEIGHBORS, FRANCE IS READY TO PLAY ITS PART IN RECIPROCITY AND TAKE INITIATIVES IN SEVERAL AREAS. COOPERATION WITH THE GERMANS AND UK ON TELEPHONE AND SWITCHING EQUIPMENT IS RECALLED AS WELL AS ONGOING DISCUSSIONS WITH SOUTHERN EUROPEAN COUNTRIES.

5. THE PLAN - THIRD STEP - CREATION OF A COMMUNITY
- -------- ---------
INDUSTRY:

-- IT WILL BE NECESSARY TO CONVINCE OUR PARTNERS OF THE ADVANTAGES PRESENTED BY "OPEN" SYSTEMS AND NETWORKS TO AID THE FREE DEVELOPMENT OF THE MOST ADVANCED SERVICES SUCH AS VIDEO-TEX.

-- IT WOULD BE LOGICAL FOR THE 10 EC STATES TO ESTABLISH THIS "OPENING" (OF MARKETS) AMONG THEMSELVES-- BUT ALSO TO ASSOCIATE IN THIS MOVEMENT ALL OR PART OF THE OTHER 16 MEMBERS OF CEPT, UNDER THE CONDITION, OF COURSE, THAT COMMERCIAL NEGOTIATIONS WITH EACH OF THEM TAKE PLACE WITHIN THE LEGAL FRAMEWORK OF THE TREATY OF ROME.

-- HOW COULD WE RESPOND TO SOLICITATIONS RECEIVED FROM FURTHER AFIELD (USA, JAPAN)--PERHAPS THROUGH THE FRAMEWORK OF OECD OR GATT?

-- FRANCE HAS A TRADITIONAL PREFERENCE FOR OPENING ITS FRONTIERS TO THE EUROPEAN COMMUNITY WITH POSSIBLE EXPANSION TO CERTAIN OTHER EUROPEAN STATES. IT IS ONLY FOLLOWING THIS ACTION THAT THE EUROPEANS WOULD BE ABLE TO STUDY A RECIPROCAL OPENING (OF MARKETS) WITH OUR LARGE, FOREIGN PARTNERS.

-- HOW CAN ONE AVOID A BRUTAL INVASION OF LOW PRICED FOREIGN PRODUCTS AND SERVICES? FIRST OF ALL, OPERATORS OF PUBLIC SERVICES CAN ADJUST THEIR CHARGES FOR SERVICES TO DISCOURAGE THE USE OF PRIVATE SERVICES AND NETWORKS AND ENCOURAGE USE OF PUBLIC (GOVERNMENT PROVIDED) FACILITIES AND SERVICES.

-- RECENT CONTRACTS AMONG EUROPEAN PTT ADMINISTRATIONS AS WELL AS DISCUSSIONS IN BRUSSELS WITHIN THE CEPT FRAMEWORK GIVE US THE IMPRESSION THAT THIS TIME THINGS HAVE BEGUN TO MOVE.

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-- FINALLY, IT SEEMS THE BRAKES MAY BE APPLIED TO THE CONTINUING LOSS OF ELECTRONICS MARKETS WHICH, AFTER THE AUDIO-VISUAL AND COMPUTER (LOSSES), WAS PROCEEDING TOWARD THE DISAPPEARANCE OF THE EUROPEAN INFORMATICS INDUSTRY.

-- THE ESTABLISHMENT OF A EUROPEAN TELECOMMUNICATIONS AND INFORMATICS SYSTEM IS OUR LAST CHANCE TO MAKE EUROPE THE THIRD CENTER OF WORLD ELECTRONICS.
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E.O. 12356 N/A
TAGS: ETRD, USTR, EIND, FR
SUBJECT: TELECOMMUNICATIONS

1. FOLLOWING IS AN UNOFFICIAL TRANSLATION OF AN ARTICLE REGARDING EC COOPERATIVE EFFORTS IN TELECOMMUNICATIONS. THE ARTICLE APPEARED IN LE MONDE MAY 23. IN LIGHT OF INTERCONNECT AGREEMENT EFFORTS BY USG AND THE RECENT FRENCH-GERMAN CELLULAR RADIO AGREEMENT, FCS PARIS BELIEVES THAT THIS LATEST EC INITIATIVE BEARS CLOSE MONITORING.

2. BEGIN TRANSLATION
THE EC MINISTERS OF INDUSTRY HAVE GIVEN A STIMULUS TO EUROPE'S TELECOMMUNICATIONS.

THE EC MINISTERS OF INDUSTRY MET IN PARIS ON MAY 18 IN ORDER TO DISCUSS EUROPE'S TELECOMFUNICATIONS INDUSTRY. PRIOR TO THIS MEETING, THE EUROPEAN COMMISSION HAD PASSED ON TO ITS MEMBERS BASIC GUIDELINES RELATING TO THE COOPERATION IT SEEKS TO ENCOURAGE IN THIS INDUSTRY. THE FIRST DECISIONS WHICH WILL LAY THE FOUNDATION OF EUROPE'S POLICY FOR TELECOMMUNICATIONS WILL BE TAKEN IN THE NEAR FUTURE.

EXPERTS BELONGING TO THE EUROPEAN COMMISSION RECENTLY POINTED OUT SEVERAL DRAWBACKS. THE COMMUNITY IS PRESENTLY DIVIDED INTO INDIVIDUAL MARKETS, AND THIS SITUATION IS FURTHER AGGRAVATED BY NATIONAL POLICIES REGARDING STANDARDS AND APPROVAL PROCEDURES. A SIMILAR SITUATION ALSO EXISTS ON THE INDUSTRIAL LEVEL WHERE MANUFACTURERS DEVELOP DIFFERENT TYPES OF EQUIPMENT WHICH ARE INCOMPATIBLE. THE COMMISSION ALSO POINTED OUT THE COMMUNITY'S WEAKNESS IN BASIC TECHNOLOGIES RELATED TO TELECOMMUNICATION SYSTEMS AND SERVICES. (THE EEC IMPORTS 83 PERCENT OF ITS MICRO-ELECTRONIC COMPONENTS). THE EXPERTS ALSO NOTED THE LACK OF AGREEMENT BETWEEN THE INDUSTRIALISTS AND THE VARIOUS PTT'S (POST, TELEPHONE, AND TELEGRAPH ADMINISTRATIONS)), WHICH REMAINS A PARALYZING FACTOR. FINALLY, EUROPEAN INDUSTRIES HAVE INVESTED MAINLY IN FIRST GENERATION PRODUCTS (TELEXES AND TELEPHONES), THEREBY NEGLECTING SECOND AND THIRD GENERATION PRODUCTS (TELEMATICS, WIDE-BAND TELECOMMUNICATION SYSTEMS, AND VIDEO-TELEPHONES).

HOW IS THE TELECOMMUNICATIONS INDUSTRY TO OVERCOME THESE HANDICAPS?
THE COMMISSION INTENDS TO SUBMIT A PRECISE WORK PROGRAM BEFORE JUNE 15, AND HOPES ITS GUIDELINES WILL BE APPROVED BY THE VARIOUS HEADS OF STATE, DURING THE EUROPEAN SUMMIT, WHICH IS TO BE HELD IN FONTAINEBLEAU ON JUNE 25, 26. IN THE REPORT, SUBMITTED TO THE MINISTERS ON MAY 18, THE COMMISSION RECOMMENDED ESTABLISHING A COMMON MARKET IN TERMINALS. HOWEVER, BEFOREHAND IT WILL BE NECESSARY TO ENSURE:
1. IDENTICAL APPLICATION OF INTERNATIONAL STANDARDS BY THE COMMUNITY
2. MUTUAL RECOGNITION REGARDING THE APPROVAL OF TERMINAL EQUIPMENT BY NETWORK USERS.
DUE TO EXISTING TECHNICAL AND INSTITUTIONAL INFLEXIBILITIES (9 SWITCHING SYSTEMS CO-EXIST IN THE COMMUNITY), THE COMMISSION BELIEVES, CONTRARY TO WHAT IT RECOMMENDS REGARDING TERMINALS, THE "OPENING" OF THE TELECOMMUNICATION SYSTEMS EQUIPMENT MARKET SHOULD ONLY TAKE PLACE VERY GRADUALLY.

AS A FIRST STEP THE COMMISSION HAS PROPUSED ASKING THE PTT'S TO OPEN A CERTAIN PERCENTAGE OF THEIR TENDERS TO THE ENTIRE EEC (FOR EXAMPLE 10 PERCENT), AND FURTHER RECOFMENDS:
A. DEFINING COMMON LONG-TERM OBJECTIVES TOGETHER WITH AN ACCOMPANYING SCHEDULE. IN ORDER TO CARRY OUT SUCH A PLAN THE COMMISSION HAS SUGGESTED CREATING A "MULTIDISCIPLINARY GROUP" WHICH WOULD PROVIDE ESTIMATES AND ANALYSES.
B. IMPLEMENTING SEVERAL PROJECTS IN THE TELECOMMUNICATIONS INFRASTRUCTURE FIELD WHICH SHOULD HAVE AN ENCOURAGING EFFECT ON BOTH INDUSTRIALISTS AND PUBLIC OPINION. FOR EXAMPLE, THE EC COULD SET UP A "PILOT" NETWORK IN ADVANCED COMMUNICATIONS (VIDEO-PHONE SYSTEMS, DATA-TRANSMISSION, AND VIDEO-CONFERENCES) WHICH WOULD CONNECT BOTH EC GOVERNMENTS AND INSTITUTIONS (THIS WAS PROPOSED BY LAURENT FABIUS IN APRIL).

TWO OTHER PROJECTS AIMING AT LONG-TERM RESULTS COULD ALSO BE LAUNCHED:
SETTING UP SECOND GENERATION TRANSNATIONAL CELLULAR-RADIOTELEPHONE SERVICES, AND LAYING DOWN MAJOR CHANNELS FOR WIDE-BAND TELECOMMUNICATION SYSTEMS.

IN ORDER TO LIMIT THE COMMUNITY'S PRESENT WEAKNESS IN TECHNOLOGY REGARDING INTEGRATED CIRCUITS, THE COMMISSION HAS SUGGESTED ENCOURAGING RESEARCH ALONG THE SAME LINES AS THE DATA-PROCESSING PROGRAMME ESPRIT.

THE COMMUNITY WOULD PROVIDE FIFTY PERCENT OF THE FUNDS, BUT ONLY WHEN THE PROJECT IS BOTH CONCEIVED AND CARRIED OUT BY COMPANIES BELONGING TO SEVERAL MEMBER STATES. THE ADDITIONAL COST TO THE EUROPEAN BUDGET WOULD BE APPROXIMATELY 25 MILLION ECU'S (170 MILLION FRANCS) OVER A PERIOD OF FIVE YEARS. END TRANSLATION
FCS PARIS/BID/MGVANDENBROECK/RBILLAM) TATGE

European Parliament Plenary Session (continued)

INDUSTRY : POSITIONS ADOPTED ON FIVE KEY SECTORS

ASBOURG (EU[illegible]day 30 March 1984 - The Parliament has adopted, after making certain additions, the[illegible]olutions accompanying the reports on five key sectors of the European industrial scen[illegible] go-ahead sectors, or sectors requiring restructuring, for which action at European level is essential, not for "dirigiste" purposes but so as to create the framework within which adaptations and restructurings will be made easier. For summaries of the reports, see EUROPE of 28 March pages 8/9.

Motor industry : assessment of the situation

The Parliament has adopted the resolution presented by Mr Bonaccini (Italian Communist) on the motor industry, after accepting certain amendments submitted by Mr Hopper (British Conservative), which, moreover, were by and large accepted by the rapporteur himself. The resolution considers the progress that has been made towards a common strategy. According to the E.P., research financed by the Community is desirable only insofar as it encourages innovation that has a reasonable chance of proving profitable ; on the other hand, it stresses the need for a global approach to regulations governing environment, safety and energy consumption. Where foreign trade policy is concerned, advantage should be taken of the temporary breathing space offered Europe by Japan's self-restraint in its exports to substantially improve European production and innovation. As for the social aspects, the Parliament reiterates the need to introduce close co-operation between workers and management when it comes to modernization issues, and it thinks that the inevitable job losses can be minimalized by policies that generate new investment opportunities. Furthermore, social accompanying measures should be designed to give workers a wide range of technical skills, enabling them to improve their job prospects

Telecommunications : call for a European strategic plan

The Parliament has adopted, after making some amendments (most of them by Mr Purvis, British Conservative), the resolution contained in the report by Mr Leonardi on telecommunications, calling for speedy introduction of a European strategic plan, the guidelines of which, to be proposed by the European Commission, would revolve around five major poles : a) stimulation of investment at Community level ; b) establishment of a European standards policy for telecommunications ; c) liberalization of monopolies and more co-operative attitude by the Post Offices ; d) launching of major research and development initiatives, to take maximum advantage of economies of scale (an amendment by Mr Moreland states that the Commission should propose a Community research programme directed at the pre-competitive sector, to complement the ESPRIT programme, and another amendment, also by Mr Moreland, states that standards that were accepted on an international front would be even better than European standards) ; e) launching of pilot schemes at European level : absolute priority should be given to a new Community trans-frontier network offering digital/ISTD services, but there is also an urgent need to make the mobile telephone systems, which are expanding rapidly, mutually compatible.

Textiles : an important sector that must be safeguarded

Concerned by the situation in the textile sector, the Parliament has adopted the resolution put forward by Mr Nordmann (French Liberal), which calls for a Community strategy involving : 1) measures to ensure better balance of trade with third countries. The Multi-Fibres Arrangement can give the EEC a breathing space, enabling it to modernize and adapt its structures : if a new framework proved necessary, the quotas system would have to be simplified and the interests of the least developed countries protected. The agreements should be subject to more stringent management and Spain and Portugal should be given the opportunity, as soon as possible, to join in with the thought being given to the question of a "Euro-Mediterranean textile area". 2) prevention of distortion in the EEC, particularly by strengthening the internal market. 3) promotion of the sector's general competitiveness by specific measures and by concentration of aid on some decisive projects so as to avoid duplication of effort. 4) measures to accompany conversion to other industrial activities. The countries affected by the changes are by and large poor ones, and the labour force predominantly female, which calls for efforts at retraining, co-ordination of Community instruments and serious action to provide better information.

Shipbuilding industry : call for positive action to revive it

Another sector in crisis was the subject of a report by Mrs Theobald-Paoli (French Socialist), whose resolution was adopted by the Parliament in a very amended form. In this resolution the E.P. : a) invites the European Commission to give up its policy of mere control in favour of a positive policy to revive shipbuilding. To

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THE NEW YORK TIMES, MONDAY, April 30, 1984

Computer Linkups Spurred by France

New Service Is Subsidized

By PAUL LEWIS

Special to The New York Times

METZ, France — As treasurer of a small engineering company in this dour eastern French town, Hubert Swaldus used to call the bank every day to ask about his company's accounts. Since the start of this year, however, all the information he wants comes to him on a little television screen in his office by touching a key.

Mr. Swaldus is a beneficiary of a Government campaign to keep France in the forefront of communications technology by placing — free so far — a telephone-connected computer terminal known as a Minitel in every French home and office.

His company, Guermont Weber, does business with the Banque Populaire de Lorraine, a coöperatively owned local bank that has pioneered "home banking" in Europe.

Vast Mass of Information

Clients subscribing to the service simply call the bank's computer and tap out their code. That brings a multitude of details about the state of their finances onto the video screen — not only balances but also lists of checks cashed, loan repayments falling due, interest rates, exchange rates and many other things.

"It makes the job of managing our cash balances very much easier," Mr. Swaldus said.

This bank's experiment with computerized home banking, which has already drawn visits by more than 300 curious foreign bankers, is possible only because of the Government's determination to turn France into a nation of home computer enthusiasts.

In its campaign, the Government is replacing the familiar telephone directory with the Minitel terminal.

No More Huge Phone Books

Instead of riffling through the pages [illegible] a bulky directory in search of a number, telephone subscribers now use their home Minitels to interrogate a central computer at the French Post Office, which holds a communications monopoly.

They can also obtain many other services on their Minitels. In addition to allowing bank clients to call up information about their accounts, the Minitel will soon make it possible for people to pay their bills by using a personalized "smart card."

Stored on this credit card will be personal information to identify the user. A specially adapted Minitel will allow the desired transaction to take place only if the right card is fed into it first.

Furthermore, the Minitel can be used to order merchandise from mail-order companies.

Data for Shoppers Available

And telephone subscribers can tap into computers that provide them with the latest information about restaurants, movie houses and shops, usually just for the cost of a phone call.

Eventually the French Post Office hopes to turn a profit by charging companies for making their names available to Minitel subscribers. It refuses to give out figures on the huge costs of the campaign, however, so no projections are possible as to when the service might start making money.

"Once the Minitel is installed in a house in place of a paper directory, you have a captive market for all sorts of computer-based services," said Rene Carrigues, who runs the Minitel program at the French Post Office.

Linking of Branch Offices

In addition, businesses can rent Minitels to build their own private computerized communications systems linking up branches and dealers over the telephone system. Currently the French Post Office is leasing about 2,000 of the terminals a month to companies for their own use.

Cycles Peugeot, the motorcycle and bicycle arm of the Peugeot automobile enterprise, has just spent $2 million equipping 600 dealers with Minitels that they use to order stocks from the company's central depot.

Other French companies that have linked their branches with private Minitel systems include Viniprix, a supermarket chain; Renault, the state-owned car maker, and La Redoubt-Trois Suisses, a mail-order retailer.

Free to All Who Want One

At present the French Post Office is giving away Minitels to anyone who wants one, working across the country region by region, with plans to start charging for them later. Currently about half of all telephone subscribers in any area agree to take the Minitel, and the Post Office is installing about 500 of them a day.

By the end of this year, the Government hopes to have one million Minitels operating, or roughly four times the total number of such machines in use throughout the rest of the world, according to the Post Office.

Two main industrial groups are responsible for designing and building the Minitel. One is made up of Matra and Bull, two state-owned electronics companies. The other consists of Bull in partnership with CIT-Alcatel, a subsidiary of the state-owned Co pagnie Générale d'Electricité.

A variety of French software co cerns, notably Cap Sogeti and Cop nique, work with each group.

Already the Minitel has chalked its first export success. In Februa Honeywell agreed to market the t minal in the United States, aiming corporate information systems.

Last year the J. C. Penney Co pany bought the First Bank System Minneapolis, which is developing commercial information-providi system based on the Minitel.

Kuwait recently ordered 1,000 Mi tel terminals to provide an inf tion service in English and Arabic subscribers. And Minitel term and software have also been sold Italy, Brazil and Greece.

Senator **Danforth**. Your testimony, Mr. Weeks, is that it's not just the customer premises equipment that is going to experience a rapid growth in imports, but also the switching and transmission equipment, which I understand is your particular line of the business. Is that right?

Mr. **Weeks**. That's right, Senator.

Senator **Danforth**. So in contrast to the distinction between the two that the ITC makes, you would simply say that you are looking for a major surge. I think you say in your testimony 300 percent over the next 5 years in imports.

Mr. **Weeks**. That's right. And we see exactly the same market conditions we saw after the Carterfone. And I see no reason in the world why this problem won't escalate right up the scale of sophistication.

Senator **Danforth**. Am I right in understanding your testimony to say that you don't necessarily regret the competition in the U.S. market so long as you are able to compete in other markets?

Mr. **Weeks**. Absolutely. That's our position and has been our position.

Senator **Danforth**. And, Mr. McDonnell, you would agree with that position?

Mr. **McDonnell**. Absolutely.

Senator **Danforth**. Do you also see that it's not just customer premise equipment, but also the other categories of equipment that is going to be subject to increased imports?

Mr. **McDonnell**. There is no question about it. In fact, I know of a specific instance where a French company literally came to the United States and purchased a group of engineers to get the latest digital technology and formed a company around them; complete French financing. And, then, of course, immediately exported the product to France.

Senator **Danforth**. Gentlemen, thank you very much for excellent testimony.

The next witness is Robert J. Keefe, chairman of the board, the Keefe Co.

STATEMENT OF ROBERT J. KEEFE, CHAIRMAN OF THE BOARD, THE KEEFE CO., WASHINGTON, DC

Mr. **Keefe**. Good morning, Mr. Chairman. My name is Bob Keefe. For the last 5 years I've represented Nippon Telegraph and Telephone Public Corp., and am happy to submit some testimony on their behalf this morning.

NTT is a telecommunications operating company, probably the world's largest after divestiture of AT&T and probably the most widely discussed company in these hearings and others before the Congress. While it has a strong research capability, it has no manufacturing facilities. In the years that I have represented NTT, the United States and Japan have completed two agreements covering NTT's procurement practices, and NTT has developed and implemented a system of procurement that is open, competitive and nondiscriminatory.

The purchase of American telecommunications equipment during that period have grown from 20 to 140 million. Prior to 1981, NTT was quite restrictive in its purchasing, perhaps the world's model for a closed corporation. It was every bit as closed as AT&T or any of the European PTT's. But that has changed. Slowly, but it has changed. And the shift began in late 1980 when the Governments of Japan and the United States completed their agreement.

Both sides have learned the shortcomings of the agreement. And the rules under which NTT now operates are the result of both the negotiations and experience. NTT made substantial improvements unilaterally, including the use of English language in its procurement documents and bids, acceptance of bids in New York, use of international contract provisions, and other items designated to facilitate participation by U.S. companies in their process.

Many of these provisions and others were adopted in the renewal as a part of our two nations' agreement. As new procedures have taken hold, both NTT and its customers have realized the advantages, as Secretary Olmer suggested, of worldwide competition—providing a more varied line of products and services at more competitive prices.

Seven percent of NTT's telecommunications and customer premises equipment market are now being served by imported products, a hefty portion of them from the United States. The changes that have so dramatically altered U.S. domestic telecommunications market are being mirrored in Japan. The Diet is now considering a measure to privatize NTT, deregulate the telecommunications market and open the industry to additional competition both from within and without the country.

As the ITC report indicates, using Japan and NTT as example, there is substantial long-range potential for U.S telecommunications manufacturers in export markets worldwide, with the emphasis on long range. The lead time in major telecommunications is long, and that fact is inescapable.

Also the importance of the principal service carrier in equipment purchases will lessen as deregulation occurs. In Japan, as here, the customer premises market is growing much faster; aggressive marketing into this sector will be essential if the promise of increased markets is to be realized. This point is one in which the U.S. companies really require greater emphasis, if NTT is a model.

NTT intends to continue to be a major factor in providing Japanese customers with state of the art telecommunications service; look forward to the benefits of international competition to the system in its endeavor.

Thank you, sir.

Senator DANFORTH. Thank you, sir.

[The prepared written statement of Mr. Keefe follows:]

SUMMARY OF STATEMENT BY ROBERT J. KEEFE
ON BEHALF OF NIPPON TELEGRAPH & TELEPHONE PUBLIC CORPORATION

The Nippon Telegraph and Telephone Public Corporation, Japan's principal telecommunications services supplier, recognizes the importance of the US telecommunications industry as the major force in world technology and an important factor in the Japanese telecommunications market.

Since NTT is an operating company, with no manufacturing facilities of its own, it must buy all its equipment. Before 1981 NTT's procurement had been almost closed to limit its sources of procurement to Japanese manufacturers. But since then, NTT has conducted its procurement under the terms of the US-Japan telecommunications agreement modeled after GATT's Government Procurement Code. As a result, NTT's telecommunications equipment purchases from foreign manufacturers have increased by some 8 times in only three years -- from $20 million in FY 1981 to $155 million in FY 1983. Approximately 90% of that was from US firms. Purchases from foreign manufacturers currently account for around 7% of NTT's telecommunications equipment purchases.

In a separate Understanding on the Customer-Premises Equipment (CPE) market, effective January 1981, NTT established a mechanism by which foreign firms can obtain approval to sell products in Japan's rapidly growing CPE market which in 1983 totalled more than $1.8 billion in sales.

Concerning ITC's analysis of the "impact on US firms," NTT has two comments:

First, NTT believes the stimulus provided by the agreement to open a formerly closed market was successful in demonstrating the merits of open procurement and can provide additional long-term opportunities for US export growth. Similar agreements with other nations could well accomplish the same goal.

Second, opportunities for CPE sales will grow in significance and will soon exceed those in the telecommunications equipment market. From FY 1981 to FY 1983, Japan's CPE market increased by 44 percent, to $1.86 billion. By contrast, NTT's telecommunications market increased by 9 percent, to $2.12 billion. The CPE trend should continue into the foreseeable future. From NTT's experience, US companies have been slow to understand and exploit that phenomenon in the Japanese market.

Since NTT neither manufactures nor distributes goods internationally, it would not be affected by any form of protectionism imposed by Japan's trading partners. However, NTT recognizes the value it has received from its new competitive marketplace and believes that open, worldwide competition in equipment and services will best serve consumers everywhere. Beyond that, trade restrictions in this area would abort the exciting opportunities for quantum leaps in technology which the liberalization of the markets in Japan and the United States are offering. NTT hopes that the United States will refrain from imposing any protectionist measures and will continue to take the lead in maintaining an open international trade system.

STATEMENT OF ROBERT J. KEEFE
on Behalf of
Nippon Telegraph & Telephone Public Corporation

The Nippon Telegraph and Telephone Public Corporation is the principal telecommunications service supplier in Japan. It is, since the divestiture of the AT&T operating companies, the largest telephone operating company in the world, and it has long been regarded as a technological leader in the telecommunications industry worldwide.

Because of its important position in the world of telecommunications, NTT is vitally interested in the subject of this hearing and the recent report by the International Trade Commission on this subject. NTT recognizes the importance of the United States telecommunications industry as the major factor in world technology and an important force in the Japanese telecommunications market.

Therefore, NTT wants to express its appreciation for the work of the ITC and this committee in reviewing in such depth and with such professionalism a subject which is among the most important to world civilization.

In the industrial age, human progress was fueled by advances in the manufacture and distribution of products. In the information age the world is now entering, human progress will be measured by advances in the technology of manufacturing and distributing information.

NTT's mission, like that of AT&T and other telecommunications service providers in the United States, is to be the catalyst for the evolution of more and more advanced communications systems while at the same time giving its customers the best possible communications service at the lowest possible cost.

NTT is essentially an operating company, a provider of telecommunications service for all the citizens and commercial operations in Japan. It maintains a highly developed laboratory to research and develop equipment for the industry, but it does not manufacture any equipment itself.

Previously, NTT's procurement had been almost closed to limit its sources of procurement to Japanese manufacturers. Since 1981 the company has conducted its procurement under the terms of the US-Japan telecommunications agreement, modeled after the Government Procurement Code of GATT. With this as a turning point, NTT made a drastic change in its procurement procedure to an open, competitive and nondiscriminatory one. This program of opportunities for manufacturers worldwide which produce better products at better prices has already seen significant improvements in sales by foreign firms and particularly by American companies.

As part of the program, NTT has implemented many measures to facilitate foreign manufacturers' entry into the Japanese telecommunications market. These measures include preparation of bid materials in English, acceptance of applications in English, acceptance of applications at NTT's overseas offices, and simplification of application forms.

NTT has also held a total of 21 seminars, orientation meetings and symposiums in various countries to give foreign manufacturers a better understanding of NTT's procurement policies and procedures.

As a result, NTT's purchases of telecommunications equipment from foreign manufacturers have increased by some 8 times in only three years -- from $20 million in FY 1981 to $155 million in FY 1983. Approximately 90 percent of that was from US firms. Purchases by NTT from foreign firms included several high technology products such as ATOMICS (Advanced Traffic Observation and Management Information Collecting System) from AT&T International, supercomputers from Cray Research, Inc., and advanced transportable digital switching systems from Northern Telecom. Purchases from foreign manufacturers currently account for around 7 percent of NTT's purchases of telecommunications equipment.

In addition to the US-Japan Agreement on NTT Procurement, the Understanding on the Customer-Premises Equipment (CPE) market became effective in January 1981. Based on this Understanding, NTT established a mechanism through which foreign firms can obtain approval to sell products in Japan's rapidly growing CPE market which in 1983 totalled $1.86 billion in sales.

The CPE market generally consists of terminal equipment connecting customers to a telecommunications system. In Japan, customers may purchase CPE equipment directly from suppliers and connect it to the telecommunications network. Before a product can be connected, however, NTT must inspect and approve it for compliance with technical requirements.

In order to facilitate foreign manufacturers' sales in Japan's CPE market, NTT revised its rules and regulations, effective January 1, 1981. Further, NTT agreed to accept test data from foreign firms and laboratories to fulfill type-approval requirements and to generally inspect the customer's installation of equipment within two weeks of the date inspection is requested.

As most industrial nations still maintain a government monopoly in telecommunications and effectively restrict multilateral trade in this area, NTT's procurement program provides an excellent model to help open a formerly closed market. Even though foreign sales generated by the NTT Agreement have yet to realize their full potential, the sales increase from $20 million to $155 million in just three years should be considered a remarkable achievement.

A number of similarities between the United States and Japan are apparent as one looks to the future. The new era of increased competition and deregulation will be changing the telecommunications environment. The Japanese Diet is now at work on a major telecommunications policy revision law which it hopes to have effective by the beginning of the next Japanese fiscal year, April 1, 1985. Among the items on the agenda of consideration are the privatization of NTT itself and deregulation of the telecommunications marketplace, allowing additional suppliers of telecommunications services. The goal of these changes is to provide even better communications for the nation by taking advantage of competition in the industry.

The role of the principal supplier, NTT, will decrease correspondingly, although NTT plans to continue to develop and maintain a state of the art telecommunications network capable of transmitting voice and data throughout the nation and available to take advantage of any prospective improvement in the equipment available.

The changes which have already taken place regarding AT&T and the ones proposed for the Japanese industry mean that the United States and Japan are opening the two largest markets in the world to full, free and fair competition. AT&T's divestiture had the expansion of service alternatives and consumer choices as its major goal. And in Japan, as in the United States, there has been a rapid increase in imports of telecommunications equipment stimulated by NTT procurement program. These factors in Japan will benefit NTT and all its customers through the increased quality and lower prices which genuine competition entail. And, in addition, they will provide a most important incentive to producers of telecommunications products to enhance their sales potential by developing increasingly sophisticated, practical and reasonably priced equipment.

During the past three and one-half years of operations under its new open, non-discriminatory procurement system, NTT has grown to respect the importance of the competition provided by such a system. It believes that the competitive nature of its procurement has begun to provide it with superior product selection and more competitive pricing than before. It has not been easy to bring this mammoth corporation into the new system. Many old patterns needed to be discarded. But gradually the advantages have become apparent and the acceptance has grown. Dr. Shinto, who has been president of NTT since 1981, is a firm believer in the advantages of the free competitive marketplace generally and in the telecommunications industry specifically. His leadership has brought real change in the attitudes of his company.

NTT, as I suggested earlier, welcomes the report of the ITC. It will be seen in the future as one of those landmark studies in this most important industry at a most critical time in its development. With regard to ITC's analysis of the "impact on US firms," NTT would have essentially two comments.

One, NTT believes the stimulus provided by the agreement to open a formerly closed market was successful in demonstrating the merits of open procurement and can provide additional long-term opportunities for US export growth. Similar agreements with other nations could well accomplish the same goal. "The long-term nature of those opportunities" is an important phrase, because the highly technical nature of this business requires substantial time to develop significant market shares.

Secondly, as Japan and other nations tend to deregulate the monopolistic industry that telecommunications has long been, the opportunities for sales in the CPE market will grow in significance. Already the telecommunications equipment market in Japan has tipped to a point where the CPE market for interconnect to the NTT system will soon be of greater size than NTT's own procurement. In the past three years, NTT's telecommunications equipment market has increased by 9 percent, to its current $2.12 billion. During the same period, the CPE market increased by 44 percent, to its current $1.86 billion. It is anticipated that this trend will continue into the foreseeable future. From NTT's experience, American companies have been slow to understand and exploit that phenomenon in the Japanese market.

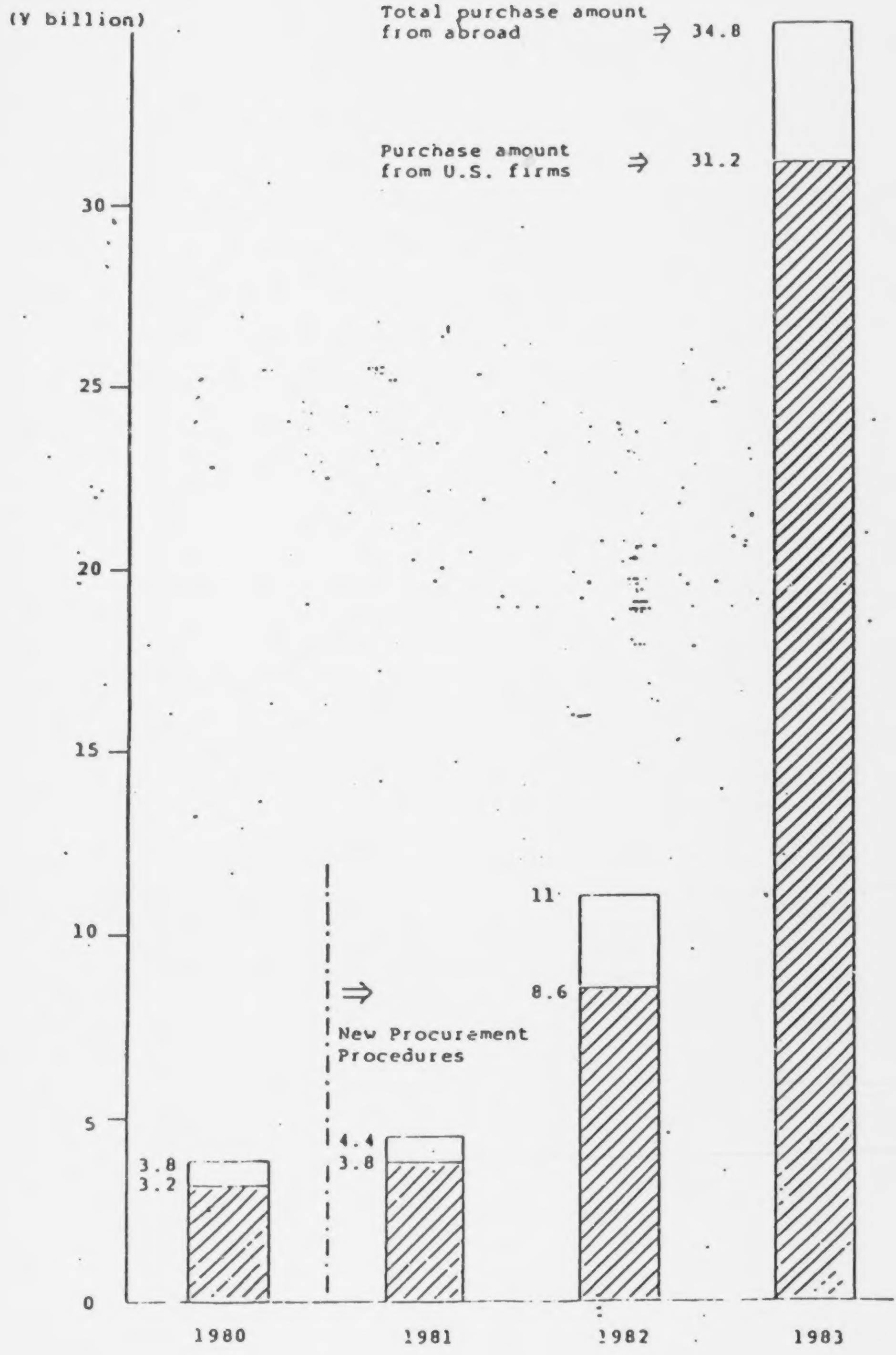
The telecommunications revolution which is taking place has made the world a smaller and more competitive place. It is natural that the telecommunications industry should be among the most competitive. It is constantly testing the limits of new technology and developing new products and services. Imagination and innovation are the key to survival in this world.

NTT believes that worldwide competition in equipment and services will best serve the consumer. NTT recognizes the value it has received from its new competitive marketplace. It believes that the open flow of goods, services and ideas is important to progress. Interdiction of this free flow by the imposition of quotas or tariffs in major markets, whether direct or under the guise of reactions to alleged inequitable market access would seem to run counter to the world market and penalize all firms in all countries which seek to compete in it.

Since NTT neither manufactures nor distributes goods internationally, it would not be affected by any form of protectionism imposed by Japan's trading partners. But it believes that it would be hurt indirectly, because it is a major consumer of telecommunications equipment. And all consumers, everywhere, would be damaged. Beyond that, trade restrictions in this area would abort the exciting opportunities for quantum leaps in technology which the liberalization of the markets in Japan and the United States are offering. NTT hopes that the United States will refrain from taking any measures of this nature and will continue to take the lead in maintaining an open international trade system.

Purchases from Foreign Firms

(Fiscal Year)



Products Purchased from Foreign Firms

(January 1981 – March 1984)

Products	Manufacturers
Advanced Traffic Observation and Management Information Collecting System	ATTI (U.S.A)
Supercomputer	Cray Research (U.S.A.)
Transportable Digital Switching System for Emergency Use·	Northern Telecom (U.S.A.)
Domestic Satellite Echo Canceller Terminal	ATTI (U.S.A.)
Terminal Controlling Subsystem and Processing Subsystem for New Telegram System	IBM (U.S.A)
Telegram Entry Equipment (Video Display Terminal)	UNIVAC (U.S.A.)
Antenna for 30/20 GHz TDMA Earth Station	Andrew (U.S.A.)
Pocket–bell Pager	Motorola (U.S.A.)
Intelligent Multiplexer	Infotron Systems (U.S.A.)
Mobile Telephone Equipment	Motorola (U.S.A.)
Microwave Antenna	Andrew (U.S.A.)
CCP Cable Connector	AMP (U.S.A.)
Lightweight Headset	Plantronics, (U.S.A.)
Meter Observation Equipment	Telesciences (U.S.A.)
Telephone Set	Northern Telecom (U.S.A.)
Software for Data Communication	ATTI, Micro Database, Intel, Softec, Intermetrics, New York Univ., Signal Technology, Microsoft, LSI, Industrial Programing
Large–capacity Private Automatic Branch Exchange Equipment	Northern Telecom (U.S.A.) Rolm(U.S.A.)
EP–10 Private Automatic Branch Exchange Equipment	ITT (U.S.A.)
Optical Character Reader for Information Processing	Scan Optics (U.S.A.)

Products	Manufacturers
9,600 bit/s Modem	Paradyne, Codex (U.S.A.)
4,800 bit/s Modem	Codex (U.S.A.)
20GHz Band Frequency Response Measuring Equipment	Wiltron, Hewllett—Packard (U.S.A.)
Magnetic Tape for Information Processing	Sumitomo 3M, Graham Magnetics Memorex (U.S.A.)
Magnetic Tape for Information Processing—356 ftpm	Sumitomo 3M, Graham Magnetics (U.S.A.)
200mm Flexible Disk Cartridge	Sumitomo 3M, Memorex Japan Verbatim (U.S.A.)
Galvanized Steel Wire Strands	Korea Iron & Steel Works (Korea)
Computer System (Mini—computer) (8 Products)	DEC (U.S.A.)
LSI—manufacturing Equipment (22 products)	Advanced Semiconductor Materials TEL—Thermco Engineering, CALMA, Varian, Apllicon, Perkin—Elmer, Nisshin—Highvoltage, Benson, Applied Materials, Jemini—Research, (U.S.A.) ISA—Riber, CIT—Alcatel (France)
Image Processing Equipment (3 products)	Gould, LISP—machine, Vicom Systems (U.S.A.)
Automatic Network Analyzer	Hewlett—Packard (U.S.A.)
LISP—machine (2 products)	Symbolics (U.S.A.)
Vertical Cable Seismic Fatigue Testing System	MTS Systems (U.S.A.)
Multi—directional Tomography System	Philips (The Netherlands)
Whole—body Computer Tomography System	GE (U.S.A.)
Scintillation Camera System	Siemens (F.R. Germany)
Telephone Directory Paper (White)	MacMillan Bloedel (Canada)
Telephone Directory Paper (Yellow)	Crown Zellerback (U.S.A.) MacMillan Bloedel (Canada)
Dry Process PPC Paper	Rank Xerox (U.K.)
No Color Hecto Carbon Paper	Orming Organizations Mittel (F.R. Germany)

Note : Including those equipment which NTT has decided to purchase.

NTT's Measures to Promote Foreign Companies' Entry Into NTT Procurement Market

Improvements on Procedures	o For NTT Procurement Market (effective as of March 1983) . Simplification of Application Forms . Acceptance of Applications in English . Acceptance of Applications in the New York, Geneva and London Offices . Extension of Application Deadline . More Flexibility in the Formulation of NTT Product Requirements. Added Emphasis Placed on Functionality and Performance. . Expansion of the Tender Scale on Select Offers . Faster Response to Possibility of Sales . Assistance Given to U.S. Government Placing Procurement Offers in the Commerce Business Daily. . Contract Conditions will Conform to International Practice of Commerce o For Customer-Provided Equipment Market . Simplification of Required Documents . Improvement of Descriptive Methods in Required Documents . Simplification of Measurement Requirements for Speech Quality . Simultaneous Announcement of Technical Requirements in Japanese and English
Promotional Activities	o Opening of Seminars or Orientations to Explain NTT Procurement and Customer-provided Equipment April 1981 (CPE) In Washington and Los Angeles May 1981 (CPE) In Tokyo June 1981 (NTT) In Tokyo (For U.S. Suppliers) July 1981 (NTT) In Tokyo (For Domestic and Foreign Suppliers) Nov.-Dec. 1982 (NTT,CPE) In Brussels (For EC Suppliers) May-June 1983 (NTT, CPE) In Washington and 4 other U.S. cities Aug.-Sep. 1983 (CPE, NTT) In St. Louis Mar. 1984 (NTT, CPE) In Vancouver and Ottawa, Canada Mar.-Sep. 1983 (Semiconductor) In San Francisco and Boston May 1984 (CPE, NTT) In Atlanta o Dispatching of Delegations March 1982 For Survey on Candidate Joint-development Products (U.S.) June 1982 For Survey on Telecommunications Industry (Canada) June 1983 For Survey on Possibility of Purchasing Telephone Terminals (U.S.) July-August 1983 For Survey on Possibility of Purchasing Software (U.S.) o Acceptance of Delegation August 1982 British Telecommunications Industries Association July 1983 EUCATEL o Issuance of English-language Materials . Procurement Procedures Guidebooks and Other Reference Materials . NTT Procurement Newsletter . Guideline for the Use of Semiconductor Components o Opening of Symposium for New Technologies . July 1983 High Capacity Mobile Land Communication System . April 1984 Optical Fiber Transmission Technology o Promotion of Technological Exchanges . Conclusion of Memorandum with NBS

Senator **Danforth**. You would agree, wouldn't you, that Japan and Europe and the United States should be playing by substantially the same rules with respect to trade in telecommunications equipment?

Mr. **Keefe**. Yes, sir.

Senator **Danforth**. And that European markets and Japanese markets should be as open as our market will be?

Mr. **Keefe**. I believe that to be true. I think NTT does.

Senator **Danforth**. That's the case right now?

Mr. **Keefe**. I think it's getting to be the case right now. I think that in Japan, for example, when deregulation and privitization occurs, the market there, in terms of regulation and so forth, will be quite similar to the United States.

Senator **Danforth**. I would hope so. I think that oftentimes one way or another the Japanese find some way to keep out foreign products from their market. I know that NTT has been traveling in the United States trying to drum up more sales, trying to convince the U.S. suppliers that they should be more aggressive. But I also understand that the estimated $140 million purchases in 1983 weren't really purchases. That much of those were not actual shipments of products but simply contracts for future sales. Is that right?

Mr. **Keefe**. Some of them are long-lead-time items. They were purchased during the period of 1983. I think in telecommunications products you will always have a lag in delivery. But I think it is not a bad number to use because it was the contracted amount. That will accumulate as time goes forward.

Senator **Danforth**. Well, I hope so. My own hope is that we could provide our Government with sufficient tools to open up other markets so that if we are going to be open, they will also be doing business with our suppliers.

Mr. **Keefe**. I think the NTT agreement is a good example to try to use in other nations.

Senator **Danforth**. Thank you, sir.

Mr. **Keefe**. Thank you, Senator.

Senator **Danforth**. The final witness is Mr. Robert Wood, director of research, International Brotherhood of Electrical Workers.

STATEMENT OF ROBERT B. WOOD, DIRECTOR OF RESEARCH, INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, WASHINGTON, DC

Senator **Danforth**. Mr. Wood.

Mr. **Wood**. Mr. Chairman, my name is Robert B. Wood. I'm appearing today before this subcommittee on behalf of Charles H. Pillard, International President of the International Brotherhood of Electrical Workers. The IBEW, for short, represents about 1 million members employed in different branches of the electrical-electronic and telecommunication industry.

Several hundred thousands of our members are directly employed in the telecommunications industry. Some of them currently work for telephone operating companies, such as the various Bell operating companies, General Telephone, United Telephone, Central Telephone and Utility, Mid-Con Telephone Co., and many other independent telephone companies.

Others are employed by telephone interconnect companies, such as Fisk Telephone Systems, RCA Service Co., ITT Services Inc., GTE Automatic Electric and others.

Many of our members, as well, are employed by companies that manufacture telecommunications equipment, such as AT&T Manufacturing Branch, AT&T Technology, formerly Western Electric.

Senator DANFORTH. Mr. Wood, let me, if I could, interrupt you. I notice that you are reading from your statement, which is 10 pages, and I wonder if you could summarize it because the whole statement will be printed in the record as though given.

Mr. WOOD. I should have clarified at the onset, Mr. Chairman, that I have a summary here.

Senator DANFORTH. All right.

Mr. WOOD. Many of our members, as well, are employed by companies that manufacture telecommunications equipment, such as AT&T Technology, GTE Automatic Electric, GTE Lenkurt, and others.

Senator Danforth, you and the members of this subcommittee are to be complimented for the attention you are bringing to the international trade effects of the AT&T breakup. The IBEW has been long concerned that one of the consequences of the AT&T breakup would be a decline in domestic employment due to increased imports of telecommunications equipment. This concern was expressed by President Pillard early in 1982 in testimony before the House Subcommittee on Telecommunications, Consumer Protection and Finance. In an earlier testimony, President Pillard's administrative assistant before the same House subcommittee expressed concern about some of the uncertainties arising from deregulation.

We also expressed similar concerns in testimony I delivered late last year for President Pillard before the Trade Policy Staff Committee hearing on the Nippon Telegraph and Telephone agreement. The major point made in that testimony and elaborated on at some length in our written submission is that the U.S. domestic telecommunications market is essentially open to foreign competition while that of Japan is essentially closed. That remains true in spite of the renewal of the NTT agreement.

The Japanese are masters at using prolonged negotiations while they exploit our markets and while theirs remain closed. Essentially closed markets for telecommunications equipment is not only true for Japan, but for most of the rest of the world.

As this subcommittee considers the impact on trade of the AT&T breakup and the future damaging effects of imports, it would be well to consider what happened to the domestic television industry where needed import relief was not timely nor adequate. The black and white television industry was completely destroyed. The color television industry has been reduced to a few final assembly operations.

IBEW members have suffered the loss of thousands of jobs in the TV industry. There is not a great deal of difference in the micro electronics involved in a television production than that involved in the production of telecommunications equipment.

What has happened to the domestic TV industry can and is already happening to the domestic telecommunications industry. And a very close parallel can be drawn between the developments.

The former Western Electric plants at Lyle, IL, has already closed. AT&T Technologies has announced three other plants—one in New Jersey, Hawthorne, IL, Indianapolis, IN, will close in the near future, resulting in an employment loss of nearly 14,000 workers.

Domestic employment in the telephone and telegraph industry is being severely impacted upon by imports. The United States cannot afford this continued exploitation of our domestic market, while other nations continue to have essential closed markets. American workers continue to lose their jobs to unfair imports. The situation cannot be allowed to continue.

The International Brotherhood of Electrical Workers recommends that our Government take immediate action to stem this tide of job destroying imports outlined in the ITC report. Reciprocity of market access must be the criteria. No foreign country should have larger sales in the United States than our producers have in that country's home market.

The United States is going through a difficult adjustment period brought about by deregulation. The adjustment is made even more arduous when foreign producers are allowed to exploit U.S. markets while they keep theirs closed.

The IBEW is appreciative of this opportunity to present testimony to relate to you our experience and to recommend appropriate remedial action.

Thank you, Mr. Chairman, and the members of this subcommittee.

Senator Danforth. Mr. Wood, thank you very much for your very fine testimony.

[The prepared statement of Mr. Wood follows:]

TESTIMONY OF
ROBERT B. WOOD
BEFORE THE
SENATE FINANCE COMMITTEE,
SUBCOMMITTEE ON INTERNATIONAL TRADE

MY NAME IS ROBERT B. WOOD. I AM APPEARING TODAY BEFORE THIS SUBCOMMITTEE ON BEHALF OF CHARLES H. PILLARD, INTERNATIONAL PRESIDENT OF THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS. THE IBEW REPRESENTS ABOUT ONE MILLION MEMBERS EMPLOYED IN THE DIFFERENT BRANCHES OF THE ELECTRICAL, ELECTRONIC, AND TELECOMMUNICATIONS INDUSTRIES. SEVERAL HUNDRED THOUSAND OF OUR MEMBERS ARE DIRECTLY EMPLOYED IN THE TELECOMMUNICATIONS INDUSTRY. SOME OF THEM CURRENTLY WORK FOR TELEPHONE OPERATING COMPANIES, SUCH AS THE VARIOUS BELL OPERATING COMPANIES, GENERAL TELEPHONE, UNITED TELEPHONE, CENTRAL TELEPHONE AND UTILITIES, MID-CONTINENT TELEPHONE COMPANY, AND MANY OTHER INDEPENDENT TELEPHONE COMPANIES. OTHERS ARE EMPLOYED BY TELEPHONE INTERCONNECT COMPANIES, SUCH AS FISK TELEPHONE SYSTEMS, INC.; RCA SERVICE COMPANY; ITT SERVICES, INC.; GTE AUTOMATIC ELECTRIC; AND OTHERS. MANY OF OUR MEMBERS, AS WELL, ARE EMPLOYED BY COMPANIES THAT MANUFACTURE TELECOMMUNICATIONS EQUIPMENT SUCH AS THE AT&T MANUFACTURING BRANCH AT&T TECHNOLOGY, FORMERLY WESTERN ELECTRIC; GTE AUTOMATIC ELECTRIC; GTE LENKURT; AND OTHERS.

SENATOR DANFORTH, YOU AND THE MEMBERS OF THIS SUBCOMMITTEE ARE TO BE COMPLIMENTED FOR THE ATTENTION YOU ARE BRINGING TO THE TRADE EFFECTS OF THE AT&T BREAKUP. THE IBEW HAS LONG BEEN CONCERNED THAT ONE OF THE CONSEQUENCES OF THE AT&T BREAKUP WOULD BE A DECLINE IN

DOMESTIC EMPLOYMENT DUE TO INCREASED IMPORTS OF TELECOMMUNICATIONS EQUIPMENT. EARLY IN 1982, PRESIDENT PILLARD EXPRESSED THIS CONCERN IN TESTIMONY BEFORE THE U.S. HOUSE OF REPRESENTATIVES' SUBCOMMITTEE ON TELECOMMUNICATION, CONSUMER PROTECTION AND FINANCE, IN WHICH HE STATED, (QUOTE) "WE ARE ALSO CONCERNED ABOUT THE ROLE FOREIGN COMPANIES WILL PLAY IN THE NEWLY COMPETITIVE MARKETPLACE...THEY (OUR MEMBERS) ARE ALSO WARY OF SUDDEN INFLUX OF PRODUCTS FROM OTHER COUNTRIES." (CLOSE QUOTE). IN AN EARLIER TESTIMONY BEFORE THIS SAME HOUSE SUBCOMMITTEE, PRESIDENT PILLARD'S ADMINISTRATIVE ASSISTANT EXPRESSED CONCERN ABOUT SOME OF THE UNCERTAINTIES ARISING FROM DEREGULATION. THIS QUESTION WAS RAISED, (QUOTE) "WHAT EFFECT WILL THE DEREGULATION HAVE ON THE IMPORTS MARKET AND HOW WILL IMPORTS AFFECT THE VIABILITY OF PARTS OF THE INDUSTRY?" (CLOSE QUOTE). WE ALSO EXPRESSED SIMILAR CONCERNS IN TESTIMONY I DELIVERED LATE LAST YEAR FOR PRESIDENT PILLARD BEFORE THE TRADE POLICY STAFF COMMITTEE HEARINGS ON THE NIPPON TELEGRAPH AND TELEPHONE AGREEMENT. A MAJOR POINT MADE IN THAT TESTIMONY IS THAT THE U.S. DOMESTIC TELECOMMUNICATIONS MARKET IS ESSENTIALLY OPEN TO FOREIGN COMPETITION WHILE THAT OF JAPAN IS ESSENTIALLY CLOSED. THAT REMAINS TRUE IN SPITE OF THE RENEWAL OF THE NTT AGREEMENT. ESSENTIALLY CLOSED MARKETS FOR TELECOMMUNICATIONS EQUIPMENT IS NOT ONLY TRUE FOR JAPAN BUT FOR MOST OF THE REST OF THE WORLD AS WELL.

IT SHOULD BE NOTED AT THIS POINT THAT NEGOTIATION HAS NOT BEEN AN EFFECTIVE TOOL IN OPENING FOREIGN MARKETS FOR PRODUCTS MANUFACTURED IN THE UNITED STATES. THE TOKYO ROUND OF TRADE NEGOTIATIONS THROUGH THE GATT SIGNIFICANTLY LOWERED TARIFF LEVELS BUT AT THE SAME TIME RESULTED IN THE PROLIFERATION OF NON-TARIFF BARRIERS. THE U.S.

HAS SUFFERED A CONTINUAL DETERIORATION IN ITS FOREIGN TRADE BALANCE SINCE THE CLOSE OF THE LAST GATT ROUND. OTHER NATIONS SIMPLY HAVE NOT ACTED IN GOOD FAITH TO OPEN THE WORLD TRADING SYSTEM.

A CASE IN POINT IS THE AGREEMENT WITH JAPAN REGARDING THE INCLUSION OF NIPPON TELEGRAPH AND TELEPHONE (NTT) AS A COVERED ENTITY UNDER THE GOVERNMENT PROCUREMENT CODE. DURING THE TOKYO ROUND OF MULTILATERAL TRADE NEGOTIATONS, THE JAPANESE GOVERNMENT SUBMITTED ITS LIST OF AGENCIES TO BE COVERED UNDER THE GOVERNMENT PROCUREMENT CODE. THE JAPANESE HAD EXCLUDED TELECOMMUNICATIONS EQUIPMENT FROM PROCUREMENT FOR THE NIPPON TELEGRAPH AND TELEPHONE OPERATIONS. THE UNITED STATES WAS NOT WILLING TO ACCEPT JAPAN UNDER CODE COVERAGE WITH THIS EXCLUSION INTACT. THERE WERE GOOD REASONS FOR THIS POSITION; ONE OF THEM BEING THAT OUR DOMESTIC TELECOMMUNICATIONS MARKET WAS OPEN TO JAPAN WITHOUT ANY CORRESPONDING OPENNESS OF THE JAPANESE TELECOMMUNICATIONS MARKET. IN PURSUING THE GOAL OF RECIPROCITY IN BOTH MARKETS, THERE WAS A "JOINT STATEMENT" ISSUED ON JUNE 2, 1979, INITIALED BY REPRESENTATIVES OF BOTH GOVERNMENTS. A PORTION OF THAT DOCUMENT READS AS FOLLOWS IN PARAGRAPH 1(A):

> "THE GOVERNMENTS OF JAPAN AND THE UNITED STATES AGREE THAT MUTUAL RECIPROCITY SHOULD BE PROVIDED AMONG JAPAN, THE UNITED STATES, AND OTHER MAJOR COUNTRIES IN ACCESS OPPORTUNITIES TO EACH OTHER'S MARKETS, INCLUDING THE MARKET FOR TELECOMMUNICATIONS."

FURTHER, IN PARAGRAPH 2(A)(2) THE JOINT STATEMENT SETS FORTH THE FOLLOWING:

> "...The Government of Japan considers the access opportunities offered by the U.S. telecommunications enterprises as relevant for the implementation of the program..."

In pursuing the spirit of this Joint Statement, a series of negotiations took place which finally culminated in the signing of the so-called NTT Agreement that was the basis for the United States accepting Japan under the Government Procurement Code. Japan thus received the benefit of the waiving of the Buy America Act. The IBEW was active during the time of these negotiations in its role as a member of the Private Sector Labor Advisory Committee. It became apparent to us during this process that the United States was going to accept an agreement with Japan that was woefully inadequate. Therefore, on December 5, 1980, we sent a letter to the Special Representative for Trade Negotiations which reads in part as follows:

> "Upon reviewing and evaluating the various proposals exchanged during these negotiatons, the IBEW is firmly convinced that anything less than the Japanese assuming all the obligation of the Government Procurement Code for all procurements of Nippon Telephone and Telegraph is unacceptable. Even with all the purchases of NTT being subject to full code coverage, it is the feeling of the IBEW that it is necessary to, as emphatically as possible, inform the Japanese that we expect the intent as well as the letter of the Code to be observed.

> It is necessary to leave it clear in their minds that because of the substantial concessions we have made in this area, particuarly the waiving of the Buy America Act, that we fully expect that NTT will begin making purchases of meaningful quantities of telecommunications equipment produced in the United States."

That letter concludes:

> "It is the belief of the IBEW that these particular negotiations afford the United States an excellent opportunity to clearly demonstrate to the Japanese that we not only expect but require reciprocity from them for our trade concessions and that we are not about to settle for the empty promises of future improvements we have continually received from them in the past."

In spite of these recommendations, the USTR signed the NTT Agreement with its Track I, Track II, and Track III provisions, which went into effect January 1, 1981. Japan was admitted by the United States to the Government Procurement Code, and the Buy America Act was waived.

In evaluating the current agreement, it is helpful to use the standards established by the former United States Trade Representative Reubin Askew and later by his successor, the current United States Representative William Brock.

In December, 1980, upon completion of negotiating the agreement, then Ambassador Askew said,

> "The proof of the new agreement with Japan will be in how much procurement NTT does with U.S. and foreign suppliers. We consider Japan is on a trial period. In three years the GATT Code will be reopened for negotiation - and if NTT has not made significant purchases from U.S. suppliers, we would consider them noncompliant with the GATT Code and the U.S. would consider countermeasures."

Ambassador Brock on June 9, 1982, before the Senate Finance Committee, Subcommittee on Trade in reporting on the operation of the MTN Government Procurement Code and the U.S./Japan NTT Agreement made the following statements:

> "THe acid test for the agreements will be their commercial results."

> "The proof of the pudding is in the eating and we are entering into a critical period for the agreement...Of course, we will not agree to extend the agreement unless we believe it has worked as intended. The next twelve months will be particularly critical..."

> "I WILL TRY NOT TO PREDICT THE OUTCOME OF OUR EVALUATION AS AT THIS POINT ONLY TIME AND SALES BY U.S. FIRMS WILL TELL. IT IS MY HOPE, HOWEVER, THAT A YEAR FROM NOW WE WILL BE ABLE TO REPORT SIGNIFICANT COMMERCIAL RESULTS FROM THE AGREEMENT."

IN 1981 TOTAL NTT PROCUREMENT WAS $3.1 BILLION. TOTAL NTT PROCUREMENT FROM THE U.S. IN 1981 WAS $15.2 MILLION.

IN 1982 TOTAL NTT PROCUREMENT WAS $3.1 BILLION. TOTAL NTT PROCUREMENT FROM THE U.S. IN 1982 WAS $39.6 MILLION.

IN TRYING TO EVALUATE WHETHER PURCHASES YIELDED "SIGNIFICANT COMMERICAL RESULTS TO U.S. SUPPLIERS," LET US FIRST TRY TO PUT THESE PURCHASES IN SOME KIND OF PERSPECTIVE. IN 1981 NTT PURCHASED LESS THAN ONE-HALF OF ONE PERCENT OF ITS TOTAL PROCUREMENTS FROM U.S. SUPPLIERS. IN 1982 IT INCREASED ITS PURCHASING FROM U.S. SUPPLIERS TO JUST OVER ONE PERCENT OF ITS TOTAL PROCUREMENT.

IN 1981, OF THE $15.2 MILLION IN PURCHASES, ALL WERE EITHER FROM BELOW THE THRESHOLD OR FROM TRACK I; SO THERE WERE NO BENEFITS DERIVED FROM THE TERMS OF THE AGREEMENT. IN 1982 ONLY $15.4 MILLION OF THE $39.6 MILLION IN NTT PURCHASES FROM THE U.S. WERE FROM TRACKS II OR III. THESE CANNOT BE THE "SIGNIFICANT COMMERCIAL RESULTS" WE WERE ANTICIPATING.

IT IS IMPORTANT TO EXAMINE WHAT TYPES OF PRODUCTS U.S. SUPPLIERS HAVE SOLD TO NTT. THE USTR ON APRIL 16, 1982, STATED THAT "WE WILL MEASURE THE SUCCESS OF THIS AGREEMENT BY THE VOLUME OF U.S. SALES OF HIGH TECHNOLOGY GOODS TO NTT."

Outside of the Track II and III purchases of Pocket Bells from Motorola, Echo Cancellers from AT&T, and Statistic Time Division Multipliers from Infortron, the remainder of NTT purchases have been of Track I purchases of "high technology goods" like Magnetic Tape and Carbon Paper. This experience brings to mind a statement by former NTT President Tokuji Akikusa, "The only thing we would consider buying overseas would be telephone poles and mops."

It is evident Japan has used the NTT Agreement as a delaying tactic in order to increase their exports of telecommunications equipment to the U.S. market while at the same time continuing to keep their market closed. The IBEW suffered and continues to suffer continual job losses all during the period that the NTT Agreement was to be opening a touted $3 billion telecommunications sales opportunity.

An analysis of the trade effects of deregulation on the U.S. Telecommunications Industry should be made with domestic employment as a backdrop. From January, 1980, to January, 1984, employment for production workers in SIC 3661, Telephone and Telegraph Equipment, declined in the United States by 23.4 percent. The IBEW has experienced about a 14 percent jobs loss in that category since 1981. Of course, this one SIC category does not cover the full range of products in the telecommunications industry; but the employment experience in this category is representative of what is happening on a broader scale.

A closer look at employment at AT&T Technologies, formerly Western Electric, also indicates the employment trends in this industry. Combined IBEW employment in these plants is now about 32,000. This is down from approximately 55,000 just four years ago. The plants where

WE REPRESENT EMPLOYEES AT LISLE, ILLINOIS, HAS CLOSED; AND THE PLANTS AT KERNEY, NEW JERSEY; HAWTHORNE, ILLINOIS; AND INDIANAPOLIS, INDIANA, ARE IN THE PROCESS OF CLOSING.

DOMESTIC EMPLOYMENT IN THE TELEPHONE AND TELEGRAPH EQUIPMENT INDUSTRY IS BEING SEVERELY IMPACTED BY FOREIGN IMPORTS. ACCORDING TO THE U.S. INDUSTRIAL OUTLOOK FOR 1984, THE U.S. TRADE DEFICIT IN THIS CATEGORY FOR 1983 WAS $240 MILLION. JAPAN WAS THE LEADING COUNTRY OF ORIGIN FOR THESE IMPORTS ACCOUNTING FOR MORE THAN 40 PERCENT OF THEIR TOTAL VALUE. THIS WORSENING DEFICIT WAS ATTRIBUTED TO THE LIMITED ACCESS U.S. MANUFACTURERS HAVE TO MANY FOREIGN GOVERNMENT-CONTROLLED MARKETS. THE EMPHASIS ON DEREGULATION AND COMPETITION HAS RESULTED IN AN OPEN U.S. TELECOMMUNCIATIONS MARKET. MORE THAN 1,100 COMPANIES, INCLUDING MANY FOREIGN FIRMS, COMPETE IN THE U.S. INTERCONNECT MARKET WHILE U.S. FIRMS HAVE ONLY LIMITED ACCESS TO OVERSEAS MARKETS WHERE TELEPHONE EQUIPMENT PROCUREMENT FALLS UNDER THE AUTHORITY OF GOVERNMENT OR SEMIGOVERNMENT ENTITIES.

AS THIS SUBCOMMITTEE CONSIDERS THE IMPACT ON TRADE OF THE AT&T BREAKUP AND THE FUTURE DAMAGING EFFECTS OF IMPORTS, IT WOULD BE WELL TO CONSIDER WHAT HAS OCCURRED IN OTHER AREAS OF THE ELECTRICAL/ ELECTRONICS INDUSTRY WHERE NEEDED IMPORT RELIEF WAS NOT TIMELY NOR ADEQUATE. A GOOD EXAMPLE IS THE TELEVISION INDUSTRY. IN THE LATE 1960S AND THE EARLY 1970S, THE BLACK AND WHITE TELEVISION INDUSTRY WAS COMPLETELY DESTROYED BY IMPORTS. TO OUR KNOWLEDGE, THERE IS NO U.S. PRODUCTION OF BLACK AND WHITE TELEVISION SETS. PROTECTION WAS ASKED FOR BUT NEVER RECEIVED, AND IN THE END THERE WAS NOTHING LEFT TO PROTECT.

The Japanese gained market share in the U.S. color TV industry by dumping. It took over three years from the time the action was filed for our government to make a determination of injury. And then while the years passed on, the dumping margins were not collected but were finally written off in the early 1980s at about ten cents on the dollar. IBEW workers saw plants close, and job losses have run into the tens of thousands.

There is not a great deal of difference in the micro-electronics involved in television production and that involved in the production of telecommunications equipment. What has happened to the domestic television industry can happen to the domestic telecommunications industry and such changes can occur very rapidly.

The United States cannot afford this continued exploitation of our domestic market while other nations continue to have essentially closed markets. The efforts of United States Government negotiators have been largely unsuccessful in opening the telecommunications markets of other nations to our products. American workers continue to lose jobs to unfair foreign imports. This situation cannot be allowed to continue.

The International Brotherhood of Electrical Workers recommends that our government take immediate action to stem this tide of job-destroying imports. Reciprocity of market access should be the criteria. No foreign country should have larger sales in telecommunications products in the United States than U.S. producers have in that country's home market. The United States is going through a difficult adjustment period brought about by deregulation. The adjustment is made even more arduous when foreign producers are allowed to exploit the U.S. market while keeping theirs closed.

The IBEW is appreciative of this opportunity to present testimony, relay to you our experience, and to recommend appropriate remedial action. Thank you.

Senator **Danforth**. My hope is that we will be able to pass some legislation. As I pointed out to Secretary Olmer, we are not exactly zipping along with legislation this year. But my hope is that it will not be long before we can give our Government the legislative tool so that we can provide for reciprocity in telecommunications trade.

I introduced a bill, along with Senator Lautenberg, a couple of months ago and my hope is that it or something like it will be the basis for action in the very near future. But if that is going to be the case, we are going to need a lot of support to get the attention of Congress focused on it and to bring it to the floor.

We have a situation here in which a hundred Members of the Senate, particularly late in the session, have virtual veto power on bringing anything to the floor of the Senate. You and your membership can be of tremendous help in trying to build the support for this legislation, once we have hearings and have a markup on the bill. So I would very much welcome your concern and your interest and your willingness to work with staff in putting together any legislative initiatives. I know you have been interested in the past in this area, and we would welcome that.

Thank you very much for your testimony.

[Whereupon, at 11:49 a.m., the hearing was concluded.]

STATEMENT OF AMBASSADOR ROBERT E. LIGHTHIZER
BEFORE THE SUBCOMMITTEE ON INTERNATIONAL TRADE
OF THE
SENATE FINANCE COMMITTEE

JUNE 26, 1984

I appreciate this opportunity to testify before this subcommittee on the situation facing the telecommunications industry. We have just received a copy of the International Trade Commission's study on the trade effects of the AT&T divestiture, and are in the process of analyzing it. We hope that it will shed some light on what trends we can expect to see in this industry. In the meantime, I think it is useful to examine the nature of the problem currently facing the U.S. telecommunications industry. I will start out today by discussing the current status of the U.S. industry and then go on to the situation U.S. exporters face in other countries.

There are two major problems that need to be addressed in dealing with the situation facing U.S. telecommunications manufacturers. The first is our growing trade deficit in a sector where we are still the world's technological leader. The second problem, which is intimately related to the first, is the inequality of market access in this sector between the U.S. and her major trading partners.

In most countries, national telephone and telegraph companies are government owned or controlled. Yet, telecommunications entities are not covered by the Government Procurement Code, the only existing international mechanism to address this problem.

As a result, the vast majority of industrialized nations have closed telecommunications markets that follow "buy national" policies. Countries, such as the United States, with the most open markets attract a high level of imports, yet are faced with limited export opportunites.

The U.S. market for telecommunications equipment is the most open in the world. Liberalization has begun in a few other countries such as the U.K., Canada, and Japan. Nevertheless, the recent divestiture of AT&T will only exacerbate this disparity in market access. The U.S. market is also the largest national market in the world; U.S. consumption of transmission equipment, the fastest growing segment of the equipment side of the industry, accounted for 35% of world consumption during the 1978-1984 period.

For the United States, openness in a largely protected world has meant a net trade deficit with most developed nations. Furthermore, half of all U.S. exports go to developing countries, and over three-quarters go to the developing countries plus Canada and the United Kingdom (the most open industrialized countries).

Over the past four years the American position in telecommunications trade has weakened considerably. Between 1980 and 1984 the U.S. industry moved from a $385 million trade surplus to a projected $435 million deficit. Particularly disturbing is the fact that while imports have been increasing dramatically, exports have remained flat.

In spite of the growing trade deficit in this sector, U.S. firms still dominate the industry worldwide. In 1982, U.S. companies accounted for almost 40% of world wide sales of telecommunications equipment. The U.S. also continues to be the world leader in telecommunications technology.

In the domestic market, however, not only are imports rising, they are also taking a greater share of the market. Over the past five years, imports have grown from 3% to 11% of the U.S. market.

It is also sobering to realize how quickly trade trends in this sector are changing. In the span of only one year (1982-1983), the U.S. moved from a trade surplus of $300 million to a deficit of $200 million.

Although U.S. exports of telecommunications equipment has remained a relatively small percentage of total U.S. shipments, this low percentage does not reflect the total involvement of U.S. firms abroad, since a number of the leading firms have overseas subsidiaries.

A growing part of telecommunications trade is in information-based services. U.S. exports of these services are estimated to be in excess of $30 billion. Total U.S. exports of services were extimated at $60 billion in 1982. A system of open and unhindered communication plays a central role in the trade of many services such as banking, insurance, advertising, and data processing. Trade in many of these services is only possible because of international communications.

Any limitation on the operation of telecommunication services would severely hinder our trade in services. This is particularly important as this is an area where the U.S. has a strong surplus. The Administration has had bilateral discussions with Canada on regulatory issues affecting trade in services. Similar discussions have been held or are planned with Japan, West Germany, and the U.K.

Let me now briefly summarize our telecommunications trade situation with respect to our major trading partners.

JAPAN

Our telecommunications equipment trade with Japan, Mr. Chairman, is characterized by a very substantial Japanese surplus. It is projected that in 1984 Japan will have a $791 million surplus in telecommunications trade with the U.S.. Japan replaced Canada in 1982 as the leading country of origin for imports to the U.S., accounting for 49% of the total value of imports.

The Administration has made it a top priority of its trade policy to secure access for U.S. products, services, and investment in the Japanese market equal to that enjoyed by Japan in this country.

Telecommunications has played a large role in that effort. The Japanese market is the second largest market in the world in this sector, as in most others. Without a real opportunity to compete in that market, our firms, who face significant and increasing competition from Japanese imports, would continue to bear a major competitive disadvantage.

Since Japan is by far the largest exporter of telecommunications equipment to this country, we could not long tolerate an imbalance in market access. Consequently, three and a half years ago we negotiated an agreement with the Japanese Government under which procurement by Japan's telecommunications monopoly, Nippon Telegraph and Telephone Public Corporation, NTT, was opened to foreign competition.

The first NTT agreement expired in December of last year. In the three years of that agreement, sales by U.S. firms did increase, from about $15 million in 1981 to some $ 142 million in 1983. But despite the sharp growth, even the 1983 figure accounted for only about 4.5 percent of total NTT procurement, and fell far short of expectations.

Moreover, little of what NTT has procured from American firms has been high technology equipment of the type that is central to the telecommunications network and likely to promote the development of long-term relationships with American suppliers.

Nevertheless, given the importance of being able to compete for a share of the Japanese telecommunications market, the U.S. industry, with whom we consulted closely during our review of whether to renew the Agreement, strongly supported its renewal. As a result, on January 30 of this year Ambassador Brock and Foreign Minister Abe signed a new three-year agreement.

In the course of renegotiation, the NTT Agreement was modified to include the advice given by U.S. industry. The revised agreement reaffirms Japan's commitment to open NTT's sizable purchases to U.S. exporters, while strengthening that commitment in a number of ways. Among the improvements incorporated into the revised agreement are commitments by NTT to: treat U.S. and Japanese firms on an equal basis in all of NTT's R&D activities, accept bids in English at NTT's New York office; and aggregate purchases so as to make them commercially attractive to foreign suppliers.

The new agreement also mandates annual reviews of NTT's performance in implementing its commitments. Our most important criterion for evaluating the agreement's implementation will be the actual level of sales of U.S. firms to NTT. In addition, we will closely monitor the proposed "privatization" of NTT, to ensure that this change in its legal status does not affect the terms of the agreement.

If this new agreement works properly, we would expect our highly competitive firms in this field to make substantial gains in sales of sophisticated, network-related equipment to NTT over both the short and long term. Moreover, for the first time, they will have an equal opportunity with their Japanese competitors for participation in NTT's R&D projects.

Telecommunications Services (VANS)

As you know, the Japanese Government has recently submitted legislation to the Japanese Diet that would further open the Japanese telecommunications market, this time in the services sector.

If the pending legislation is approved by the Diet, effective April 1, 1985 NTT will become a privatized company without a legal monopoly in telecommunications services. And private firms, both domestic and foreign, will be able to compete to provide telecommunications services.

This reform is of great importance to the U.S. in several respects. First, we have made clear to the Japanese Government that the change in legal status of NTT does not, and should not, in our view, affect the NTT agreement.

Second, with respect to the opening of the services sector, the legislation now before the Diet excludes the restrictions earlier proposed on foreign investment in those firms that will be permitted to provide so-called enhanced or value-added services, such as remote data banks, credit checking services, and the like.

Those restrictions were removed from the legislation after we communicated our strong objections to the Japanese Government. We pointed out that Japanese telecommunications equipment suppliers have benefitted greatly from the open U.S. market for telecommunications products, and that the U.S. market for services is completely unregulated and open without discrimination to all firms, domestic or foreign.

Although the legislation dropped the investment restrictions, it does incorporate a requirement that large scale value added network services firms register with the Ministry of Posts and Telecommunications.

We intend to keep in close contact with the Japanese Government as the administrative ordinances to implement this new law are developed, in order to ensure that the resulting administrative procedures for registration neither impede market entry by U.S. firms nor disadvantage them vis-a-vis their Japanese competitors.

The telecommunications services sector in Japan promises to be a very large market. American firms have a wealth of experience and technology in this sector that we believe should translate into a significant competitive advantage in their participation in the Japanese market. If indeed that is the case, and our services firms do as well as they should in the Japanese market, that fact should serve as an important stimulus to the market for U.S. telecommunications equipment in Japan.

With the lowering of the formal barriers to the equipment and services market in telecommunications, the Japanese market ought to provide a real opportunity for competitive U.S. firms. The real test of the openness of the market, however, will lie in the success of competitive U.S. products and services there. If the opening is real, sales of significant size should flow.

EUROPEAN COMMUNITY

The European Community (EC) countries, taken as a whole, would constitute a telecommunications equipment market second only to the United States; they currently account for about 37 percent of the world market. There is, however, no EC-wide "common market" in this equipment. Most European national markets are dominated by their individual state-owned postal and telecommunications organizations (PTTs). With some exceptions (notably the United Kingdom), the EC Member States' PTTs prefer to purchase telecommunications equipment manufactured within their own borders.

For these reasons, European countries have refused to include PTT purchases under the GATT Government Procurement Code, which would have opened them to import sales. Because of this preference for national procurement, even EC telecommunications producers find it difficult to make sales to their Community trading partners. Consequently, they have vigorously pursued export markets outside the Community, and the European Community enjoys an impressive trade surplus in these products.

It is projected that in 1984 the U.S. will have a bilateral surplus of about $240 million in telecommunications equipment trade with the EC. This number is substantially unchanged from 1980, when it totalled $229 million. This surplus has been maintained while the overall U.S. trade balance with Europe has deteriorated sharply.

These trade figures are somewhat misleading because a large portion of U.S. trade with the EC in this sector is military trade, related to NATO. Because of the inadequate trade statistics in this sector, it is impossible to separate the military from the commercial trade. In addition, a majority of the larger American telecommunications firms have subsidiaries or joint ventures in the EC and a great majority of the trade between the EC and the U.S. in this sector is intrafirm trade.

Individual EC Member State Telecommunications Policies

Within the EC the Member States vary as to their degree of openness, ranging from the U.K. which is one of the most open markets in the world to France and West Gernamy where PTT procurement is essentially closed to non-national firms. The lack of market access is evidenced by the fact that France, West Germany, the Netherlands, Italy, and the U.K. all have surpluses in telecommunications trade despite their much smaller markets, fewer economies of scale, and lack of technological leadership.

Import penetration in France in 1980 was only 1.0% as opposed to 11% in the UK, 17% in West Germany, 18% in Italy and 57% in the Netherlands.

Initiatives Toward a Unified EC Telecommunications Market

Despite the fact that most European countries protect their telecommunications equipment markets from import penetration, there is a growing realization within the EC that this approach has drawbacks. National barriers to telecommunications sales within Europe have also fostered a costly limits to competitiveness--conflicting standards and specifications, duplication of research and development efforts, and perhaps a weak industry response to rapid technological change.

The EC Commission, the Community's executive arm, advocates the development of a truly "European" telecommunications industry as part of a larger European industrial policy initiative in high technology. It believes that a "common market" in the area of telecommunications equipment would help the growth and development of a stronger European world market position in this important high technology sector. Although the EC Member States appear to be quite divided on specifics, the general need to develop a unified EC telecommunications policy has been explicitly recognized in recent EC Summit Council meetings, and will be addressed again at the current Summit Meeting at Fontainbleau, France.

The most recent EC Commission proposal for the creation and stimulation of an EC telecommunications market in equipment and services includes the following elements:

- harmonization of standards, particularly in the area of terminals;
- the progressive opening of Member State PTT markets to intra-EC (not foreign) competition, both in equipment and services (for example, by 10 percent);
- stimulation of Member State collaboration in research and development; and
- the creation of a Community lending facility to aid the modernization of telecommunications services in economically depressed areas of the Community.

Past Commission proposals along these lines, undercutting Member State authority in telecommunications services and equipment, have proved too ambitious to attract support from the major telecommunications equipment-producing countries. It is uncertain if these recent proposals will receive the approval at the Summit required to move the proposal forward.

Other European Initiatives for Telecommunications Cooperation

Although France is one of the strongest competitors in Europe in telecommunications equipment, it is concerned that Europe as a whole is slipping behind in telecommunications development. From its perspective, however, a major cause of the problem is competition from non-European companies producing, investing, and selling in EC telecommunications market. France seeks the creation of a "European Telecommunications Area," developing European telecommunications cooperation by closing the market to competitive outsiders like the United States and Japan.

The proposal advocates the exclusion of foreign (i.e. non-EC) goods from the market through joint agreement among purchasers (the PTTs) and suppliers (EC vendors), and through the selective elimination of the imports of EC nonmembers. The proposal states that only after the creation of the closed "European Telecommunications Area" could discussions begin with the U.S. and Japan on opening the EC market to foreign trading partners.

Currently, one concrete manifestation of coordinated development of telecommunications equipment in Europe is a Franco-German agreement to jointly develop a cellular (mobile) radio/telephone network. It is not clear that non-EC suppliers, even those located in the Community, were intended to compete for contracts under this agreement, and this has raised our concerns about the future access of U.S. firms to the EC telecommunications equipment market.

If the Community does decide to move forward with a more coordinated approach to telecommunications markets, it will be important to ensure that the result is a more open, EC telecommunications market, rather than one that progressively restricts international exchange of goods and technology.

CANADA

The proximity of the Canadian market has traditionally made it an important market for U.S. telecommunications manufacturers. The Canadian market consists of a mix of private, governmental and joint private-governmental entities.

Canada is encouraging the development of certain aspects of competition in its domestic market and liberalizing the customer--provided interconnect market. Although a number of U.S. firms have subsidiaries in Canada, the primary problem they face is an extremely vertically-integrated market. This causes a lack of opportunity which may in large part be responsible for our growing trade deficit in telecommunications trade with the Canadians. The sectoral deficit nearly doubled from $53 million in 1982 to $98 million in 1983.

The U.S. and Canada are currently considering the negotiation of a bilateral free trade area that would cover telecommunication and computer goods and services. This would be a good first step, if only on a bilateral basis, to opening up trade in the telecommunications sector.

DEVELOPING COUNTRIES

Besides Brazil's policy designed to develop a domestic telecommunications industry, the developing countries do not, for the most part, pose market access problems for U.S. industry. Although the U.S. is currently importing a large volume of low-cost equipment, such as telephone sets, from Hong Kong and Taiwan, the developing countries do not have the capability to manufacture sophisticated equipment and thus must puchase it from foreign sources.

A major determinant of sales in developing countries is the export financing that can be provided. The French, in particular, use mixed credits, a financing package which includes both a concessional and a non-concessional component, with the whole package tied to procurement from the donor country. These schemes are very expensive; between 1980 and 1983, the French spent approximately $300 million on mixed credit packages for purchases of French telecommunications equipment.

CONCLUSION

There is no question that we, the Administration and the Congress, must carefully analyze what is happening in the telecommunications industry and examine what can be done to ensure that the U.S. industry is not unfairly deprived of its technological and commercial lead.

The major impediment to U.S. telecommunications exports is restricted market access, and in particular closed government procurement. One possible avenue that needs to be explored to deal with this problem is the renegotiation of the Government Procurement Code and our attempts to expand its coverage to telecommunication entities.

Another concern is that of mixed credit financing used, by the French government in particular, to support telecommunications exports. Participants in the OECD Arrangement on Export Credits have pledged not to offer mixed credits with a grant element of less than 20%; otherwise the Arrangement provides little discipline over the use of mixed credits. One of our highest priorities in our ongoing export credit talks is to place further limitations on the use of trade-distorting mixed credit financing. To increase our negotiating position, the Eximbank charter renewal legislation of 1983 included authority for the Eximbank and the Agency for International Development to establish defensive mixed credit programs. Eximbank has, in fact, just recently authorized concessional financing to offset a French mixed credit offer on a telecommunications project in Cyprus. The Bank will continue to review individual projects where foreign mixed credits are being made available and plans to judiciously match such offers in order to bolster the U.S. negotiating position.

The lack of adequate trade statistics is a critical problem for the telecommunications industry. Both the industry and government lack the statistical information necessary to demonstrate market penetration, examine the type of products entering the U.S., or even prove whether any injury has occurred to the U.S. industry. It is vitally important that we develop better trade staistics to enable us to closely monitor the rapid shifts in trade trends in this sector.

The new international tariff nomenclature which is currently being developed, the Harmonized Code, will provide the needed improvement in trade statistics. Unfortunately, the Harmonized Code will not go into effect until 1987 at the earliest.

We need to explore what can be done in the interim to ensure that we have the information on the industry that we need in order to assess what situation it is in, and what action, if any, the Administration or Congress should take.

We as a government also need to develop a clearer idea of what our priorities are in this sector. This is a very international industry which encompasses companies with a broad variety of conflicting problems and concerns. This diversity argues for a careful and thorough analysis of U.S. interests in this sector. We need to determine what is best to ensure the long-run competitiveness of the U.S. telecommunications industry as well as what is in the national interest.

In order to expedite this assessment, USTR is chairing an interagency task force to examine the trade-related aspects of the telecommunications industry, develop an analysis of the various components of the industry, investigate trends in the U.S. market and in foreign markets, and analyze the Telecommunications Trade Act of 1984. Building in the ITC report, this group will be moving on a fast track and we hope it will have its analysis completed by the end of the summer.

USTR has been meeting and working closely with the private sector in order to assess their needs and ensure that we are doing all that we can to be responsive to their needs. It is important to realize, however, that neither the Administration nor Congress all that we can to be responsive to their needs. It is important to realize, however, that neither the Administration nor Congress will be the ones to determine whether the U.S. telecommunications industry succeeds in selling abroad and remains competitive. In the final analysis U.S. industry and government must work closely together we are to meet with success.

In countries where the government is trying to negotiate increased market access U.S. firms must support that effort by making aggressive efforts to sell in those markets. We need to show our trading partners that not only can U.S. firms offer a competitive product at a competitive price, but that they will put in the necessary work to market aggressively and tailor their products to the needs of the foreign consumers. Only working together can we assure America's continued preeminence in this vital sector.

The Telecommunications Trade Act of 1984 addresses the two major concerns facing the U.S. telecommunications industry today, the rapid growth of imports, and the inequity of market access between the U.S. and her major trading partners. We look forward to working together with U.S. industry and the Congress in coming up with solutions to these problems.

Statement of AT&T Supplementary to the Testimony Provided by E. Wayne Weeks, Jr., on June 26, 1984, to the Committee on Finance, Subcommittee on International Trade, Concerning International Trade in Telecommunications Products.

It is AT&T's policy to support a free and fair international trading system. In the international communications market today, many countries have industrial and trade policies which support their telecommunications industry at the expense of its foreign competitors, including U.S. competitors. These policies are manifested in numerous tariff and non-tariff barriers (particularly the latter) which disadvantage U.S. companies. The non-tariff barriers evident in most major foreign markets are in the form of: local content requirements; actions that limit or deny foreign investments; requirements for transfer of technology; and home supplier preference in government procurement. The U.S has virtually no impediments to entry by foreign firms providing telecommunications equipment; no other major telecommunications marketplace is as open or accessible as is our own. AT&T's views on reforming the world's system for international trade were submitted to the International Trade Commission (ITC) in April in connection with the Commission's inquiry concerning the changes in the U.S. telecommunications industry and the impact on U.S. telecommunications trade (see Attachment 1).

Structural changes in the U.S. telecommunications industry resulting from regulatory decisions and the recent Modified Final Judgment (MFJ) have created a climate encouraging entry and expansion by foreign-based enterprises. We believe that such activity will only increase for all telecommunications equipment in the near and long term.

The ITC study of June, 1984 refers to the pre-divestiture Bell Operating Companies (BOCs) as a "captive market" for AT&T, which is not accurate. Prior to divestiture, the Bell Operating Companies purchased the best and least expensive equipment regardless of source. Because the BOCs and Western Electric (now called AT&T Technologies, Inc.) were vertically integrated, the benefits of such integration resulted in Western Electric being the major supplier to the Bell Operating Companies. Divestiture ended this relationship, with its attendant efficiencies --- efficiencies which inured to the benefit of the Bell Operating Companies and to the country's international trade position as AT&T maintained a leading role in world technological advancement.

The ITC study does not reflect the full story in network products in the post divestiture environment. Our figures project sales of network equipment for foreign-based companies to be a billion and a half dollars in 1984 - a 30% increase over 1983 - with a potential 200% growth over the next five years. These figures include the sales of foreign-based companies where the equipment sold is assembled in their plants in the U.S. We include such sales because U.S. companies are not as free to enter the home marketplace of such foreign competitors in the same way, and they must be included to give a true picture of the impact of international competition on this country.

Our view that the ITC projections of growth in sales of network products by foreign suppliers significantly understates the case is supported by the experience in Customer Premise Equipment (CPE). Conditions favorable to entry by foreign producers first occurred in the case of CPE, with results well documented in the ITC study. Such conditions are just beginning to be apparent for network products. A similar result can reasonably be expected.

The FCC's decision in the Second Computer Inquiry has hindered AT&T in its ability to compete with its foreign-based competitors both here and abroad. The structural separations have wide-ranging requirements and prohibitions which hinder AT&T's ability to draw upon the resources of all its units to offer customers, foreign and domestic, integrated and cost effective answers to their telecommunications needs. AT&T is denied the right to organize for optimally efficient innovation, and to bring the fruits of that innovation to the marketplace in the manner best calculated to meet customer needs.

On April 30, 1984, AT&T petitioned the FCC for relief from these structural separation requirements.[1] Attachment 2 is AT&T's letter of transmittal to the FCC together with Part III of our filing which focuses on international trade matters. The petition describes the dramatic impact on the U.S. balance of trade in telecommunications equipment caused by a growing array of foreign suppliers, all with strong bases in their home countries and many actively supported by their governments. By 1983, five of the nine vendors of digital network switches in this country were foreign, including the three largest suppliers of such switches worldwide -- Northern Telecom, C.I.T. Alcatel (France) and Ericsson (Sweden). If domestic firms are to respond effectively to the immediate challenges of strong foreign competitors without resort to protectionism, it is vital that they be permitted to employ their competitive strengths without artificial and outmoded restraints such as those imposed in the Second Computer Inquiry. It is to be hoped that the result of FCC proceedings will be to eliminate such restraints that prevent AT&T from competing on an even basis with foreign competitors.

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[1] The pleading cycle established by the FCC culminates in reply to comments due August 8, 1984.

ATTACHMENT I

AT&T

James E. Olson
Vice Chairman of the Board

550 Madison Avenue
New York NY 10022
Phone (212) 605-5358

April 16, 1984

Mr. Alfred E. Eckes
Chairman
International Trade Commission
701 E Street, N.W.
Washington, D.C. 20436

Dear Mr. Eckes:

Re: Changes in the U.S. Telecommunications Industry and the Impact on U.S. Telecommunications Trade (Investigation No. 332-172)

I wish to take this opportunity to provide AT&T's general view on the status of international telecommunications trade, currently the subject of investigation by your Commission. Responses to the Commission's questionnaire related to that investigation were sent under separate cover to the Secretary of the Commission.

We believe that problems with world trade primarily reflect the tendency for sovereign nations to ignore or violate well-established principles of free trade when they believe it best suits their short-term interests. Any reform of the present system, therefore, needs to recognize that problem, and seek to gain greater acceptance of the principles of free trade. Competition, particularly in hi-technology industries, has led to growing impediments to world trade in telecommunications. The Department of Commerce study, The Telecommuncations Industry, contains a good overview of this situation. It is important to remove such impediments and open telecommunications markets worldwide. A fuller statement of our views is contained in the attached position paper, which we recently prepared.

In addition to the barriers to participation of U.S. manufacturers in international trade, which are detailed in our position paper, there are domestic governmental policies that also have substantial adverse impact. A principal concern is the continued applicability to AT&T of the structural separation requirements established in the Federal Communications Commission's Second Computer Inquiry. Those requirements, originally created in 1980 and applied to the then integrated Bell System, are not properly applicable to AT&T in the post-divestiture environment in which AT&T neither owns any local exchange facilities nor any other business possessing monopoly characteristics. They artificially and anti-competitively constrain AT&T's ability to develop, manufacture, and market Information Age technology, both here and abroad, on equal terms with the large and effective foreign suppliers who have impacted our balance of trade so adversely. For these reasons, AT&T intends to petition the FCC for relief in the near future.

Sincerely,

Vice Chairman of the Board

Attachment

Improving the International Trading System

Overall Trading System

We agree that the international trading system is at a critical juncture and that it is afflicted by manifold problems. Such problems, however, largely reflect both competing national interests and the unwillingness of sovereign nations to abide by well-known principles of free international trade when their individual self-interests would be adversely affected. That is especially true when particular nations find their economies in difficulty and when politically influential sectors within such nations would be hurt by compliance with otherwise well-accepted rules of free trade.

The situation is especially complex, because:

(1) No nation is wholly pure--that is, every nation, including the U.S., has at times resorted to protectionist measures to ease some difficult political or economic situations. As a result, every nation is able to rationalize its own expedient violations of the principles of free trade, since others have also acted that way.

(2) Different areas of the world and different sectors of world trade are affected by widely different sorts of problems. These problems would still exist even if the international trading system were rather basically reformed, and they would continue to tempt various countries to act in their own self interest, even when that violated the system of international trade.

Because of these difficulties, we believe that our best hope lies in working within the present multi-lateral system--improving it, where possible--but, most importantly, getting each nation to accept and be guided by principles of free international trade that have been well-known for many years. Unfortunately, such an approach offers no easy panacea. Rather, it would require an intensive effort by the major trading partners of the world to tackle their problems--principally on an overall, macro level, but also on a sector-by-sector basis, as might be needed. That, of course, is essentially an extension of the basic approach that GATT has taken throughout the post-World-War II period.

Within that broad context, we believe that AT&T's contribution to the discussion about the international trading system can best be confined to the situation in our own sector--where we have had actual experience--rather than by reiterating the broad principles of free international trade to which we fully subscribe. Our experience, of course, has been in the telecommunications service and equipment segments of the hi-technology sector.

Trade Issues Related to Telecommunications and Data Services

Overview

Industrialized and developing nations throughout the world recognize the importance of hi-technology industries to the achievement of both national economic growth and international competitiveness. As a result, there is intense competition internationally among high technology products and services, including telecommunications. Many countries have responded to the situation by instituting industrial and trade policies to support their telecommunications industries. Inherent in these policies are numerous tariff and non-tariff barriers to protect national markets from international competition, with non-tariff barriers gaining predominance during the past decade.

Such policies hurt world economies in all the ways that impediments to trade are known to do. However, these policies are particularly disadvantageous to the U.S., whose telecommunications markets are much more open than those of many other nations.

Broadly, such impediments to world trade in telecommunications take the following forms:[1]

(1) Restrictions on Trade in Telecommunications Products and Services

In virtually all countries the telecommunications market is dominated by publicly owned or managed telecommunications monopolies (PTTs). Their procurement budgets are large, and their procurement policies predominantly favor their national equipment suppliers. Consequently, these markets are insulated against foreign competition, and the close alliances that exist between the PTTs and the local suppliers serve as effective non-tariff barriers. Competitive bidding which includes foreign participation is not common. Delayed requests for foreign participation also work to block foreign entry into the market.

In addition, the incompatability of various national standards on communications equipment and networks hampers world trade in telecommunications. For example, the proliferation of incompatible national standards for attaching equipment to public communication networks serves as a non-tariff barrier, restricting or even eliminating access to markets by foreign suppliers.

(2) Government Intervention in Private Research and Development (R&D)

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[1] The addendum to this paper contains a list of specific illustrative examples of such impediments to the international trade of high technology products and services. Additional information on such impediments is available from the sources cited there.

To a large extent, international competitiveness in high-technology is forged by continuing investments in capital and in R&D. Foreign governments' support of efforts by their domestic industries to gain market advantage in these areas plays a pivotal role in advancing their current and future competitiveness. Government support can be financial (such as low cost credit, grants, and tax incentives) and/or regulatory (such as suspension of antitrust regulations to get broad co-operation from numerous firms). These actions, in conjunction with discriminatory public procurement practices to favor national suppliers, create formidable barriers to international trade. Foreign suppliers are excluded from participating in or benefiting from these extensive R&D efforts. (Recently, however, Japan did agree, in principle, not to arbitrarily exclude U.S. firms from their R&D efforts.)

These kinds of support for the telecommunications industries abroad, in conjunction with the open market in the U.S., combine to prevent U.S. telecommunications producers from entering foreign markets, while enhancing the ability of foreign producers to penetrate our markets.

(3) Restrictions on data transmission

There is close linkage between telecommunications and data services. Many governments place restrictions on telecommunications and international data flows. In the past, these restrictions had been justified on the grounds of insuring national security, protecting individual privacy and social culture, and meeting legitimate aspirations for national advancement in this high-growth area. However, such restrictions increasingly are being placed for purely commercial reasons. In either case, of course, such regulations distort and curtail international trade in communications and data processing.

Restrictions on the international flow of data range from requirements that some data processing be done within national borders to constraints on the type of information transmitted. These restrictions frequently curtail the flow of commercial data which does not infringe on individual privacy or national security. These regulations are usually stated in general terms, and permit discriminatory applications to promote local industries.

(4) Violations of international patent/copyright laws

Many developing countries wishing to acquire foreign technological know-how choose to violate international patent/copyright laws by lowering their protection period and/or requiring compulsory licensing of technology and/or conducting ineffectual judicial review of known violations. Moreover, many developed nations, who have so far adhered to international conventions, are considering adopting measures to weaken their domestic protection laws.

(5) Regulations Regarding Foreign Investment

Governmental policies regarding international investments are generally integrated within an overall policy package designed to meet national economic objectives. These investment policies regulate a whole range of operations of the foreign firm. Foreign investments in certain sectors can be limited or even denied. Limits on equity participation, and requirements for local content, transfer of technology, and/or licensing arrangements can be imposed. These regulations can effectively hamper or eliminate local market access to foreign firms.

Recommendations

The increasing use of protectionist measures to meet narrow, nationalistic objectives in this highly integrated world threatens to slow the expansion of world trade and, consequently, world economic growth. Since the efficient allocation of resources worldwide and improving world prosperity depend upon a free and open international trading system, the eventual dismantling of all barriers to trade is an important objective.

Improving trade in high-technology products, services, and investments is especially important. At present, the marketplace is neither open nor free, and there is a growing tide of protectionism abroad, especially in the use of non-tariff barriers to trade. Positive steps should be taken to liberalize such markets and the trade practices and regulations affecting them. To accomplish that goal, we offer the following recommendations:

(1) World tariffs and import quotas in high-technology product trade should be dismantled.

(2) Markets in communications and data processing services should be liberalized. (Trade in services in general--which is increasing in its importance to world trade--has not yet been taken up by General Agreement on Tariffs and Trade (GATT), although that may happen in the near future);

(3) GATT's Agreement on Technical Barriers to Trade should be used to prevent certification procedures (for attaching communication and data processing equipment to public networks) from functioning as a non-tariff trade barrier. Such negotiations would be most effective if they were accompanied by advances in international standardization of equipment and networks;

(4) GATT's Government Procurement Agreement should be extended to include telecommunications industries. (Bilateral negotiations on government procurement policies to effectively open markets should also be used.)

(5) Government subsidization of private industrial efforts and the watering down of international patent laws should be discouraged.

(6) Internationally acceptable rules and guidelines should be developed to facilitate the free flow of capital among countries by limiting the terms and conditions which individual countries can place upon foreign investment in their markets. (Currently, there are few rules or guidelines regarding foreign investment.)

AT&T Company
February 24, 1984

Addendum

Following are examples of existing and potential foreign impediments to high-technology trade and investment. [1]

1. Tariffs on imports of:
   (a) communications hardware available locally: Spain
   (b) integrated circuits: European Community (EC)

2. Import controls on communications and data processing hardware: Brazil.

3. Incompatability of various national standards on communications equipment and networks: EC

4. Discriminatory procurement policies by government owned or managed telecommunications industries to favor national suppliers: EC, Japan

5. Government financial and regulatory support of private R&D effort to improve the competitive position of domestic industries: EC, Sweden, Japan

6. Considering moves to dilute patent protection laws to acquire foreign technological know-how through reduced protection period and/or compulsory licensing arrangements: Germany, France, Canada, Japan, developing countries

7. Foreign investments can be subject to equity limitations, local content requirements, and/or transfer of technology requirements: Netherlands, South Africa, developing countries

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[1] Telecommunications: Pressure and Policies for Change, OECD, 1983; and

Telecommunications and Information Products and Services in International Trade. Hearings Before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, 1981.

ATTACHMENT II

AT&T

James R. Billingsley
Senior Vice President

550 Madison Avenue
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April 30, 1984

The Honorable Mark S. Fowler
Chairman
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Chairman Fowler:

The monumental changes brought about by divestiture of the Bell Operating Companies, the continued explosive growth of competition, and new directions in customer demand and vendor provisioning in the telecommunications and information industry compel AT&T today to petition the Commission to relieve the firm from the Computer II structural separation rules.

The Commission's 1980 landmark Computer II decision marked a major step forward in facilitating the participation of common carriers, including AT&T, in the competitive provision of CPE and enhanced services, free from traditional regulation. In AT&T's case, the Commission permitted the provision of CPE and enhanced services only through a fully separated subsidiary, with a collection of restrictions on the business activities of the subsidiary and on its interactions with other AT&T entities. The Commission considered these restrictions necessary to ensure against AT&T obtaining an unfair competitive advantage primarily by virtue of its ownership of local "bottleneck" facilities.

In fashioning these rules, the Commission sought to balance the "benefits" of the structural separation conditions against the "costs" of the restrictions in terms of impeding the ability of carriers to contribute effectively in the competitive marketplace. Wisely, the Commission explicitly and consistently recognized the provisional nature of the balance it struck, indicating that it would continually reexamine the separation requirements and would be quick to change them or remove them entirely if warranted by experience or changed circumstances.

It is difficult to imagine how the 1980 circumstances underlying the Commission's decision could have changed more profoundly or dramatically than they have with divestiture. At the same time, during the past four years competition in the provision of CPE and enhanced services has flourished under the Commission's Computer II regime. These changes warrant, indeed compel the removal of the separation restrictions from AT&T. In terms of the FCC's calculus, any benefits of the restrictions have evaporated while the costs remain.

The Commission's fundamental concerns in adopting the restrictions were discriminatory access to "bottleneck" transmission facilities and potential cross-subsidization of competitive activities with monopoly revenues at the expense of regulated ratepayers. Bottleneck facilities are precisely those which were divested with the BOCs. Likewise, any "monopoly" revenues were divested with the BOCs -- AT&T has none. Competition flourishes in all of the markets in which we participate.

Thus, the Computer II restrictions on AT&T no longer provide public benefit. In the post-divestiture world these benefits are already provided -- and more effectively -- by the competitive marketplace. On the other hand, the costs of continuing structural separation impose a significant and unnecessary burden on AT&T, in clear contradiction of the pro-competitive objectives of the Commission's policy. The interactions of the various Computer II requirements on AT&T tend to deprive customers of future AT&T leading edge products and services which customers should have a right to consider among their alternatives. The outmoded web of restrictions diminishes AT&T's incentives and abilities to bring advanced technology to the marketplace in the form of timely new products and improved network services. They also encourage AT&T's competitors to misuse the regulatory process in order to gain competitive advantage, depriving customers of additional choices in the process.

The overall impact of the Computer II restrictions on the business is pervasive. The rules erect unnecessary barriers that prevent the free sharing of internal technological developments, disrupt the exchanges of vital information necessary for efficient linkage of marketing, research, development, and manufacturing, and prevent an efficiently coordinated response to customers' requirements. As a consequence, potential innovative products and services may be abandoned in the face of structural obstacles or may be brought to market only after inordinate delay. Technological advances are slowed -- both within the AT&T Technologies Sector and in the AT&T Communications network -- and the range of products and services available for customers to choose from is narrowed.

Competition in the telecommunications and information market continues to intensify, with each month bringing new entrants and new joint ventures or other combinations designed to meet customers' needs. In fact, it is becoming increasingly common for AT&T's largest customers also to be our competitors in some manner in this marketplace. Given the fierce, pervasive competition now present in the industry, AT&T must have the flexibility to respond promptly and efficiently to constant, rapid change in order to satisfy customer requirements and contribute effectively in the competitive marketplace.

AT&T's ability to compete successfully in the future would help to reverse the substantial advantage in balance of trade in telecommunications equipment now held by foreign based competitors. Balance of trade statistics show a dramatic reversal in the U.S. position for the 1982-1983 period, going from a surplus of exports over imports of about $150 million per year from 1978-82 to a trade deficit of some $450 million in 1983. If AT&T is to respond effectively to the immediate challenges posed by strong foreign rivals, it is vital that it be permitted to employ its competitive strengths without outmoded, unnecessary restraints.

What we now seek is relief from the structural separation conditions and certain other restrictions of Computer II which today apply without sound reason to AT&T. The granting of this relief will not necessarily mean that AT&T will not continue to provide CPE and enhanced services through a subsidiary, just as many other firms have voluntarily elected to do. We seek freedom from the specific and interrelated structural separation conditions that the Commission's regulations impose -- each of which can interfere, in a myriad of ways, with the efficient provision of products and services in all the markets in which AT&T participates. Moreover, the restrictions as a whole compound the burdens of the individual constraints in ways which the Commission did not contemplate when it decided Computer II.

We recognize that the Commission is already addressing some of the problems caused by the Computer II restrictions. Whether to remove the ban on the resale of basic services by AT&T Information Systems, for example, has been at issue since August 1982 and is now ripe for Commission resolution. The broad relief sought in today's petition is imperative, and we urge the Commission to proceed immediately with its evaluation of our request. At the same time, we urge the Commission not to delay the removal of specific restrictions where warranted during its evaluation of today's more general request.

In short, the Commission committed itself to modify the Computer II structural separation restrictions quickly if warranted by changes in the underlying circumstances. Circumstances have changed so drastically since 1980 that the very reasons for the restrictions no longer apply. The cost/benefit balance -- which was drawn so narrowly in favor of the restrictions that even under the circumstances of 1980 it troubled four of the six Commissioners -- has swung completely the other way under the radically changed environment of 1984. None of the anticipated benefits remain, yet the costs are far greater than ever expected and increasing rapidly because of changes in direction and competitiveness of the industry. The result is to handicap AT&T significantly and to keep it from being the efficient, flexible, responsive entrepreneur that it must be to meet customer requirements and to compete fairly with the likes of IBM, GTE and a host of foreign vendors.

We do not believe that the Commission ever intended any such result. Had the Modification of Final Judgment been in effect in 1980, we doubt that the Commission would have felt any need to impose additional structural separation rules upon AT&T. We hope the Commission will now move quickly to remove these outmoded, unnecessary rules which are costly to AT&T, to its customers and to competition.

Some of our competitors may oppose our petition and seek to continue to hobble AT&T or, if that fails, at least to delay the day when AT&T can approach the same freedom to compete as they enjoy. It is a sad commentary that some firms which enjoy the fruits of our competitive system will seek, wherever possible, to use the Commission's regulatory process to deny or delay that freedom to others. We hope that the Commission will not permit any such tactics to work here. Extensive proceedings are not required for the Commission to conclude that its rationale for the structural separation restrictions was eliminated with divestiture. The Commission removed the structural separation rules from GTE under a case far less compelling than ours.

In conclusion, the Commission's overriding policy in Computer II has been to bring the benefits of carriers' participation to the marketplace -- to meet the public interest by engendering full and fair competition without unnecessary and counterproductive regulatory constraints.

That policy is more appropriate and sound than ever, and it compels the FCC to act expeditiously to put AT&T on a more equal footing with its competitors. AT&T stands ready to assist the Commission in whatever way possible to facilitate its evaluation of our request.

Sincerely,

/s/ J. R. Billingsley

Identical Letters To:
The Honorable James H. Quello, Commissioner
The Honorable Mimi Weyforth Dawson, Commissioner
The Honorable Henry M. Rivera, Commissioner
The Honorable Dennis R. Patrick, Commissioner

Extract...FCC Petition for Relief
from Structural Separation
Requirements.

III. THE COMMISSION SHOULD TAKE PROMPT ACTION TO RELIEVE AT&T OF STRUCTURAL SEPARATION.

69. The time has come for the Commission to relieve AT&T and consumers from the costly and unnecessary burden of the Computer Inquiry II structural rules; fundamentally changed circumstances have removed all justification for the rules' continued application to AT&T. No longer will the nation's interests tolerate the pervasive, chilling effects of the rules on AT&T's ability to compete effectively in a marketplace that is not only fast-paced and technologically sophisticated,* but is increasingly global in scope.

70. Today, many of AT&T's most potent competitors are foreign-based. Over the past decade, an array of foreign telecommunications equipment suppliers, all with strong bases in their home countries and many actively supported by their governments, have aggressively penetrated the United States market. Names like Northern Telecom, Mitel, NEC and Fujitsu, once unknown, are now familiar to domestic buyers.

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* On the accelerating pace of scientific innovation in the telecommunications industry, a former Executive Director, Technical Disciplines, for USITA has said:

> Much has been written in recent months about the ever increasing pace of change in the industry. Indeed, many people are dismayed at the prospect of keeping up with the changes, much less trying to anticipate them. . . . New technological advances will continue to make equipment just a few years old look absolutely archaic.

Paul Fleming, quoted in "Technology? You Ain't Seen Nothin' Yet," The Telephone Engineer & Management (January 15, 1982).

71. The most dramatic impact is seen in the United States balance of trade figures. The Department of Commerce telecommunications equipment, worldwide export and import statistics for 1978-1983 shown below illustrate the magnitude of the foreign inroads. After years of relative stability, annual imports almost doubled in 1983 to $1.2 billion and the trade balance declined sharply, by some $620 million, resulting in the United States' first deficit in at least six years:

Exports and Imports of Telecommunications Equipment (in thousands of dollars)*

	1978	1979	1980	1981	1982	1983
Exports	388,240	447,532	557,040	653,259	829,144	789,960
Imports	225,407	313,119	413,982	487,491	620,346	1,201,916
Trade Balance	+162,833	+134,413	+143,058	+165,768	+208,798	-411,956

The figures which recount the United States' trade balance for the same product categories only vis-a-vis the United States' trading partners in the Organization for Economic Cooperation and Development ("OECD") similarly illustrate the accelerating strength of the foreign challenge. In the five years from 1978 to 1982, trade with the OECD nations showed deficits which steadily grew from $67 million to $196 million. Then in 1983 alone, the deficit more than doubled, to $450 million. Dominating this picture were the two countries, Canada and Japan, which are home bases to companies which have made the most dramatic inroads in the United States markets. See pp. 60-61, infra. In 1983 alone, the nation's telecommunications equipment trade deficit with Canada amounted to $97 million; the 1983 deficit with Japan was a stunning $450 (up from $277 million in 1982).

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* The source for the statistics in this paragraph are the United States Department of Commerce, Export Reports EM546 and Import Reports IM146, 1978-1983, for the tariff categories which correspond to SIC Code 3661.

72. Virtually no equipment product line is immune from inroads by competitors from abroad. One illustration is in domestic sales of digital central office switches, where foreign-based competitors have taken the initiative. Between 1980 and 1983, for example, Northern Telecom's sales increased from $122 to $600 million, which represents a 70% compound annual growth rate.* As of January 1, 1983, Northern Telecom had installed or had orders for 31% of all digital lines/trunks in the United States; NEC (Japan) had installed or on order 5% of the lines/trunks; and Plessey accounted for 9%.** By 1983,

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* Source: Remarks of Donald A. Noble, EVP Finance for Northern Telecom to the NY Society of Security Analysts (December 1, 1983) and to the Toronto Society of Security Analysts (February 9, 1984). One group of communications analysts predicts that in 1985, central office digital switch sales, which in 1983 approximated 25% of all central office switch sales, will constitute 74% of central office switch sales, and that this trend will continue. Frost & Sullivan Report "Digital Telecommunications Market," (October 1983), p. 105.

** Source: Dittberner Associates Report, "Project ESS" (February 1, 1983), Vol. 13, Part II, Section XXVII, pp. 1-34.

the world's three largest suppliers of digital switches -- Northern Telecom, C.I.T. Alcatel (France) and Ericsson (Sweden) -- were selling digital switches in this country and of the nine vendors of digital network switches in the United States, five were foreign.*

73. These competitors have been extremely successful in the United States CPE market as well. In 1982, for example, foreign based firms (Northern Telecom, Mitel, NEC, Seimens and Fujitsu) captured over one-third of the PBX market (measured in terms of lines shipped) while AT&T's share of sales dropped from 51% in 1977 to only 23% in 1982.** In the area of telephone instruments, foreign competitors include not only the established telecommunications companies -- Northern Telecom, NEC, Oki and Ericsson -- but also Japanese vendors of household electronic goods -- including Hitachi, Panasonic, Sanyo, Sony and Toshiba.

74. If domestic firms are to respond effectively to the immediate challenges posed by strong foreign rivals,

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* This trend is likely to persist because the divested BOCs, which in 1983 purchased 78% of all switches sold by AT&T, are no longer affiliated with AT&T and are aggressively exercising their independence. For example, five of the seven RBOCs have entered into contracts with Northern Telecom, Inc. for the purchase of digital central office switching equipment over the next few years. One source reports that Pacific Telesis placed initial orders worth $70 million, and total orders over the next two years are estimated at approximately $200 million. Source: Electronic News (March 5, 1984) p. 50.

** Source: Northern Business Information Inc., The Telecom Market Letter. Vol. 4, No. 7; June 3, 1983, p. 2.

without resort to protectionism, it is vital that they be permitted to employ their competitive strengths without artificial and outmoded restraints. Despite AT&T's demonstrated technological capabilities, structural separation prevents it from marshalling its innovative resources fully. For AT&T to compete most effectively, it must be allowed -- without artificial encumbrances -- to achieve the full benefits of functional integration.

75. In sum, the benefits of structural separation are gone and the costs are increasing, at a time when the nation's balance of trade in telecommunications equipment is in steep decline. Because the rationale for imposing structural separation no longer applies to AT&T, it is incumbent on the Commission to proceed without delay to reevaluate and remove the structural requirements which have already hampered and restricted AT&T too long. The "important events" which the Commission acknowledged might arise which would require it to abandon the structural rules (see p. 4, supra) have now occurred.

76. For all of the reasons stated above, AT&T requests the Commission promptly to relieve AT&T from the structural separation requirements set forth in Section 64.702 of the Commission's Rules.

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